THE BRICKBUILDER

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ADVERTISING

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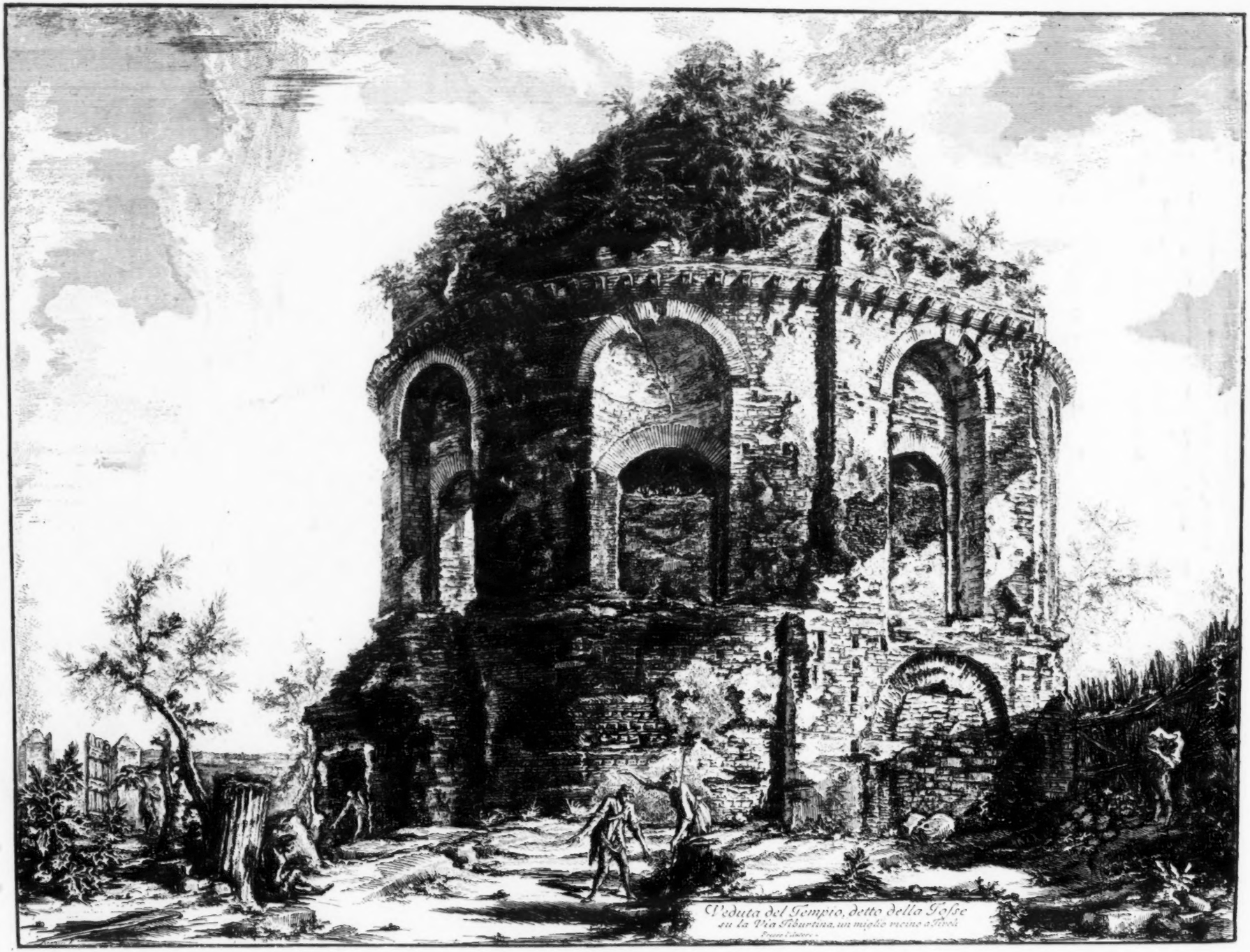


THE SO-CALLED "TEMPIO DELLA TOSSE," NEAR TIVOLI.

GIOVANNI BATTISTA PIRANESI, DEL.

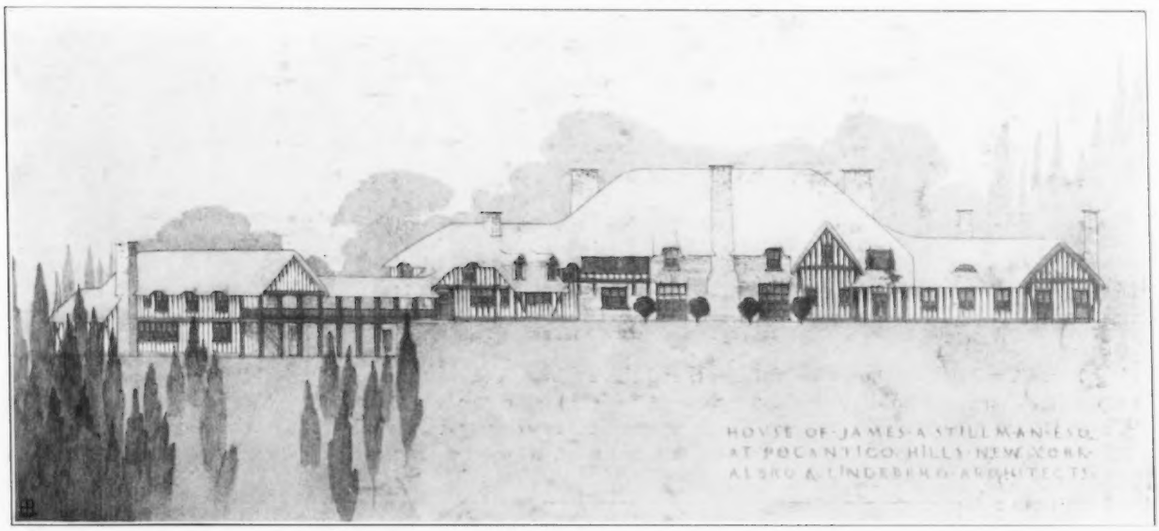
With its vaulted dome and circular form this building resembles the so-called Temple of Minerva Medica, although it is smaller in size. It has not the usual characteristics of a temple and it has too many windows to be a tomb. It may have been a Nymphaeum, of which many were built in and near Rome, usually in the form of a lofty chamber decorated with columns, statues, and pictures, with a stream of spring water gushing from a fountain in the center so as to form a cool and agreeable retreat in summer.

THE BRICKBVILDER

VOL. 18 NO. 7 DEVOTED TO THE INTERESTS OF ARCHITECTVRE IN MATERIALS OF CLAY JULY 1909

Thatched Roof Effects with Shingles.

BY HARRIE T. LINDEBERG.



HOUSE AT POCANTICO HILLS, N. Y.

YEAR by year the public shows an increasing interest in the artistic qualities of domestic architecture, and while we have many worthy examples of large and formal residences, our humbler domestic work, in charm, repose, and distinction is wofully lacking.

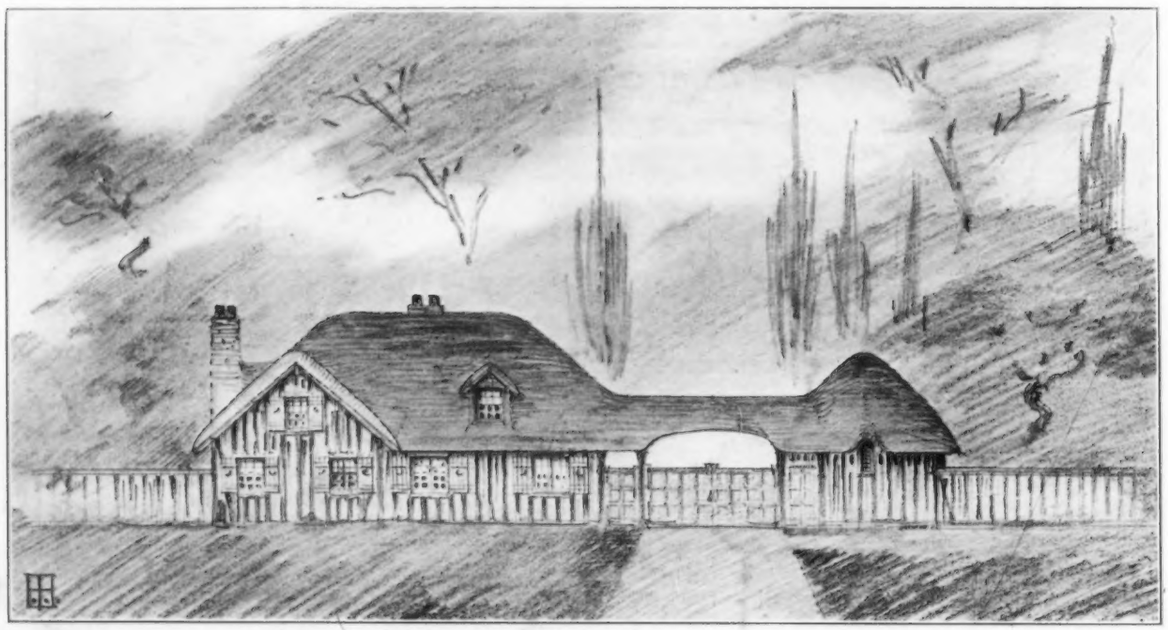
The increased interest however, following the increased desire for country life, and outdoor living, has given rise to a demand for modest homes designed with the same high standard of work and care in detail that the architect gives to his larger problems. Many capable architects are unwilling to give consideration and time from their more important commissions to these smaller problems, which is undoubtedly the cause of the lamentable work scattered through our countrysides and suburbs.

WAGON SHED, WESTCHESTER COUNTY, N. Y.

The architects who have ability and are willing to put conscientious study in a small house, have long realized the fact that this type of work involves as much attention to detail as the larger houses, and greater ingenuity to bring forth successful results.

In this country, the old farm buildings of New England and the South, built by men who had no other end than utility in view, are still the best examples of our domestic architecture. In these we seldom see roof lines broken into useless gables, or unmeaning ornament and showy paint—all of which are a source of wasteful expense

and depressing things to live with. In our climate a house in the country should be low or give the effect of being low. Two stories should be sufficient, and there is a peculiar charm in rambling single story wings.



GATE LODGE, WESTCHESTER COUNTY, N. Y.

There is also a charm in passing through casement windows of the living room or dining room, down but a single step to the lawn or out upon the brick terrace. A house high up is never quite so friendly to its garden or lawn.

FARM BUILDING, WESTCHESTER COUNTY, N. Y.

In a country house the greatest beauty is that of fitness of purpose and suitability of situation. Our homes should pretend to be nothing but what they are; neither fantastic in outline nor frivolous in detail, and they will then contain no qualities which will detract from simple dignity. We should use where possible the local materials at hand, for where we find used in any given part of the country the materials nature provides, there is found the most beautiful architecture, because it is the most appropriate.

The preeminent beauty of the English countryside is in no small measure due to its cottages and farm buildings, generally pleasing in themselves and always in harmony with their surroundings. Each is built for comfort and convenience, each suiting its position and each a renewed proof, if one be needed, that what is best adapted to its purpose is the most beautiful. The successful roofs in the English cottages owe their charm to the fact that they are unbroken in surface and treatment.

Unquestionably the roof is one of the principal features in country house designing, sheltering as it does the whole building and conveying at once a kindly feeling of homeliness.

There is probably no falser note in the builder's art than the use of one material in imitation of another; while in commercial work, through conditions well understood, we often build falsely, it is with no intent of crudely imitating thatch that I have studied the problem here presented,

but rather to produce the texture which the thatch roofs contain and not to make the pretense that a cedar shingle can imitate the English thatch.

The aim of the manufacturers of practically every building material, is to produce exact shape, smooth surfaces, and uniformity in color, and our workmen have been taught to lay every material, whether it be brick, stone, or shingles, with absolute accuracy, as the standard of the best work, thus producing that soulless uniformity which may be the pride of the workman, but is the despair of the artist.

It was some years ago, with a commission to design a number of farm buildings with unusually attractive settings, that the problem presented itself of finding a material for the roofs which would carry out the charm of other materials at hand.

COTTAGE AT EAST HAMPTON, L. I., N. Y.

With the regulation roofing materials such as shingles, tile, and slate, the problem seemed a discouraging one until I remembered that many years ago Mr. McKim, in some domestic work at Lenox tried an experiment of laying the courses of shingles on a stable roof at varying exposures to the weather, with the result that the roof surfaces gained somewhat in texture.

With this example in mind I came across Mr. Magonigle's admirable Irwin House at Glen Ridge, N. J., which showed the sky lines softened by bending the shingles slightly at the gables and laying them in horizontal courses varying in exposure from 2 inches to 5 inches to the weather.

The accompanying illustrations merely show how this idea has been developed and carried out.

In the first place a slightly convex surface is given to the whole roof by furring on each rafter from 4 inches to 6 inches in height in the center of the roof and diminishing the furring to nothing at the ridge and eaves. The furring strips are then laid on horizontally about 4 inches on centers. At the gables the furring is constructed with the greatest care by 1 inch by 2 inch shingle-strips running with the roof rafters, which carry the general convex lines of the roof to meet the hanging verge board.

At the rounding of the gables the furring is brought well forward on the verge board and then returned against it, forming in section an arc of a circle. This rounding at the gables is greatest at the apex and diminishes towards the eaves. Often on a main roof it is desirable when a decided softening of the gable is wanted, to drop the roof rafters gradually at the ridge for a distance of 3 or 4 feet back from the verge board. To be effective the dropping at the verge boards must necessarily be sudden.

Aside from the rounding of the gables and the softening at the eaves and ridges, perhaps the best feature of this roof is its texture produced by laying all of the courses of shingles out of the horizontal in long irregular waves, so that the courses vary in exposure to the weather 1 inch to 5 inches.

After two courses of shingles have been started at the eaves with the butts together, these long sweeping curves should be laid out on the roof with a soft pencil by the architect himself.

To keep the laying from becoming too irregular it is sometimes necessary to introduce an absolutely horizontal course in every eight or ten courses of shingles. Even then almost constant supervision is necessary in the case

COTTAGE AT WOODMERE, L. I., N. Y.

FARM HOUSE, WESTCHESTER COUNTY, N. Y.

HOUSE AT KINGSTON, N. Y.

of inexperienced workmen, in order that the waving may not become too affected, or from failing in the other direction by appearing stilted and set.

It is only in the rounding of the gables or on quick turns in angles between the side walls of a dormer and the roof surface, that it is necessary to steam or wet the shingles. When dry the cedar shingle is decidedly brittle, but steamed or wet it will bend most accommodatingly.

In some cases of very quick curves it is found necessary to back-saw or split the shingles into narrow strips and in all cases of quick curves the shingles must be nailed through the butts.

CHICKEN HOUSES, WESTCHESTER COUNTY, N. Y.

STABLE, MOUNT KISCO, N. Y.

HOUSE, MOUNT KISCO, N. Y.

As a matter of fact the construction of the furring is of the first importance, for with this clumsily or cheaply done, no dexterity in the laying of the shingles will bring successful results.

Every valley must be rounded, every ridge softened and absolutely no sharp angles permitted in the entire roof surface.

In my early experiments I used sheet lead or zinc to cover the apex of the gables and the ridge of the house, but as the workmen became more experienced I found that a perfectly tight ridge could be constructed with the shingles themselves, which is naturally more effective as the increasing weathering of the shingles makes a constantly increasing contrast between their tone and the color of the lead or zinc ridge.

FARM BUILDING, WESTCHESTER COUNTY, N. Y.

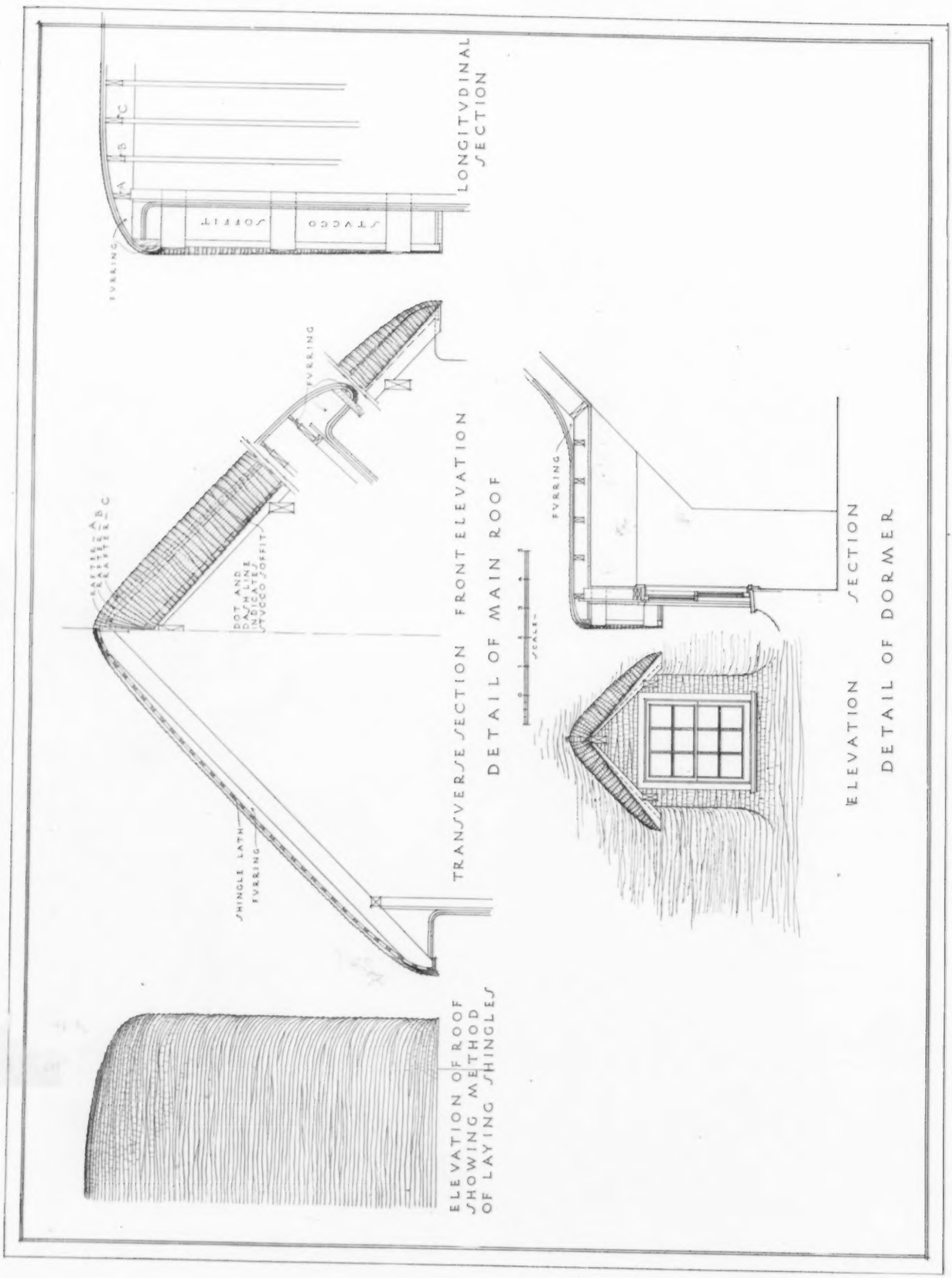
I have been asked if these roofs are effective as far as durability and tightness are concerned. I can only say that as about fifty per cent more of shingles are used on a roof of this type than when shingles are ordinarily laid at 5 inches to the weather, it is a simple matter to see that such a roof must be more effective where the shingles have an average exposure of only 2½ inches to the weather.

It is of course obvious to the trained architect or student of design that these roofs can be used appropriately in but one way, and that is as an integral part of the design. To build these roofs on any structure not meant to receive them would be an architectural absurdity.

Yet this is frequently the most difficult fact to impress upon the layman.

Perhaps a letter received from a gentle lady in some western state (selected from many curious inquiries), most aptly illustrates this lack of understanding in the lay-mind. The lady wrote asking my firm its "charge per square foot" for "designing a thatch roof" for her house, the superstructure of which was already erected.

HOUSE, MOUNT KISCO, N. Y.



DETAILS OF CONSTRUCTION — THATCHED ROOF EFFECTS WITH SHINGLES.

Warming and Ventilating with Special Reference to Hospital Buildings—III.

BY D. D. KIMBALL.

AS AN alternate for the gravity method of exhausting the air from the room to be ventilated there may be used an exhaust fan system, in which case the fan may be placed in the attic, on the roof, or in the basement, as may be found most convenient. The fan is thus used instead of the accelerating coils to insure a draft in the ventilating flues, its merit being its positive action and the possibility of reducing the size of the vent flues, if necessary, because of the increased velocity obtainable, although many experts make a practice of maintaining the same size of vent flues as in the gravity system of exhausting the air. The registers should, in any case, be as large as in the gravity system in order to prevent improper air velocities, resulting in drafts, in the room.

The objections to the use of the fan lay in the danger of its being noisy, the hum or noise of a fan being particularly trying in the case of persons suffering from nervous disorders, and in the possibility of the fan withdrawing more air than is supplied by the fresh air system, when not so intended, both of which objections may be removed by proper designing, the most important element in overcoming the first objection being the proper mounting of the fan and its motor or engine and the connection of the fan to the vent ducts, as will be explained later on.

It may easily be shown that where a large amount of air is to be moved it is less expensive to make use of a fan than to use accelerating coils, and it is usually quite as simple in operation.

A fan or blower may be made use of in supplying the fresh air instead of using a gravity system of air supply. Such a system is often called a plenum system. The air may still be heated by the indirect radiators at the base of the flues, being driven by the fan to and through the indirect radiators, in most cases being first partially heated by being passed through tempering coils at the fan. The indirect radiators at the flues are then called reheaters, and are made smaller. Such a system makes possible the individual control of the temperature of the different rooms and is an admirable system.

Where there are objections to the placing of indirect radiators at the base of the flues, as, for instance, where they would disfigure finished rooms in the basement, use may be made of what is known as the double duct system, in which two ducts are carried from the fan to the base of each flue, the upper duct containing air heated to a high temperature by being passed through the tempering and reheating coils located at the fan, the lower duct containing tempered air of a less temperature which has passed through the tempering coil only, the warm air duct being of sufficient size to carry all of the air required if necessary, the lower duct usually being of the same width and about two thirds the depth of the hot air duct. Branch connections are made from both ducts to the base of the vertical flue, with a mixing damper at the point of this double connection or junction. This damper is controlled from the room above by an automatic temperature controlling system, if possible, or by hand if necessary.

The hot blast system or single duct system without reheaters at the base of the flues, in which all the heating and regulating of the temperature of the various rooms of the building is done at the fan, is not to be recommended because of the total lack of proper means by which the temperature of the rooms may be controlled individually according to the different exposures or other requirements.

With the plenum system the vitiated air may be exhausted by the gravity method, or the air may be both introduced and exhausted by means of fans. In many cases this is not only desirable but, as in the case of large hospitals, it is necessary because of the volume of air which is required, and the limited space available for flues which necessitates smaller flues and a higher velocity of the air therein. When the entire dependence for warming and ventilating is placed upon a fan system great care must be used to so design the system as to insure against a breakdown.

In this connection it is well to note that a fan in itself seldom breaks down, but occasionally a motor or engine will give trouble, on account of which fact it is desirable that duplicate engines or motors be installed if possible, or at the least it is important that there be kept on hand duplicates of the important parts of the motors, etc., which will make possible quick repairs. It may be possible to install duplicate outfits complete, or two fans of such size that they may both be used ordinarily, each for a part of the building, while in case of breakdown to one the other may, by means of cross connections, be made to provide the entire building with a sufficient amount of air and heat to prevent discomfort.

In setting the fan, its bearings, and the engine or motors used to drive it, it is important that the foundations be kept entirely separate from any of the building foundations, in doing which it is wise to have a layer of sand one inch or more in thickness under and about the foundations on all sides. The fan wheel may well be mounted on a shaft having its bearings entirely independent of the fan casing, the foundation for these bearings being entirely independent of foundations for the fan, motor, or building. The peripheral velocity of the fan wheel and the velocity of the air through the fan discharge outlet should be kept as low as possible, but the safe maximum varies with different types of fans and under different conditions. In hospital work under usual conditions a peripheral velocity of the wheel of about 4,200 feet may be considered the maximum with a velocity of air through the fan discharge outlet of not over 1,800 feet per minute, this being regulated by the size of the fan discharge opening. In connecting the air ducts to the fan it is well to place a canvas sleeve consisting

of two thicknesses of ten ounce canvas securely fastened to fan and duct, applying thereto four coats of lead and oil paint. This sleeve should be about 8 inches long. Particularly if the motor be an alternate current motor, it is wise to place the motor, belt, and fan pulley in a room having no connection with the air chamber or ducts, by extending the shaft through the wall, and in some cases it is even necessary to provide a wood box lined with hair felt and canvas held in place by wire to cover the motor, belt, and fan pulley.

There are many hospital superintendents who object to the use of the fan system, while quite as many will be found who prefer the fan system. Both have their proper places and both may, by proper design, be made to cover a large range of service. Objections raised to the fan system are usually by superintendents who have had unfortunate experiences with fan systems which have been so designed or installed that the operation of the fans has been noticeable in the wards and rooms of the hospital, or else drafts or other unsatisfactory results have been obtained therefrom. A fan system can always be installed which will be noiseless and satisfactory, and so that no difference in operation can be detected when compared with the gravity system. On the reverse hand in a great many cases a gravity system can be installed which will give just as positive and satisfactory results as the fan system, and in small buildings it is usually more desirable.

Much might be said of the matter of the proper location of fresh air and vent flues, and the location of their openings into the rooms. Both warm air and vent openings and their connecting risers may, to advantage, be placed on the outside walls if properly insulated, or they may be placed on the crosswise partitions, the warm outlet being placed nearer the outside wall with the vent riser on or near the inside wall. It is not wise to place both warm air and vent openings on the inside walls, as the air moving from the warm air opening to the outside wall, dropping down there as it is cooled and then passing back across the floor will cause drafts and cold floors unless direct radiators are used on the outside walls, which, as previously stated, are undesirable in rooms occupied by patients.

The air opening from the warm air flue into the room may be placed about eight feet above the floor, or it may be placed under the window, the latter arrangement meeting with much favor among engineers and hospital superintendents. In this latter position the warm air as it enters the room meets with or opposes the downward current of air formed by the cooling effect of the windows and walls and so prevents drafts. It is found that the diffusion of the air throughout the room, with the volume dampers in the fresh air and vent ducts properly adjusted, is thorough.

The proper location of the opening for the removal of the vitiated air is also much discussed, the principal point of difference in opinions being as to whether the opening shall be at the floor or at the ceiling. There are strong advocates of both positions. The opening at the ceiling doubtless involves the greatest expense of operating as it takes more heat out with the air removed, but either position will give satisfactory ventilation if properly designed and managed. If the outlet is placed high the inlet must be low and enough fresh air must be supplied to maintain a slight plenum condition in the room. The general consensus of opinion has long favored the bottom opening and it may be counted upon to give entirely satisfactory results. Many engineers provide both top and bottom openings, usually with a switch damper so arranged that the top opening may be used in summer, when it is desirable to relieve the heat of the room as much as possible or when special occasion demands, the bottom opening being used during the cold weather.

It is difficult, in the light of recent tests, to maintain that a majority of the CO_2 settles to the floor for, because of the temperature at which the air is exhaled from the lungs and the movement of the air in the room, it will be found in varying amounts throughout the room. The aim therefore should be to secure the introduction and thorough diffusion of a constant amount of fresh air throughout the room and the constant removal of a like amount of the vitiated air.

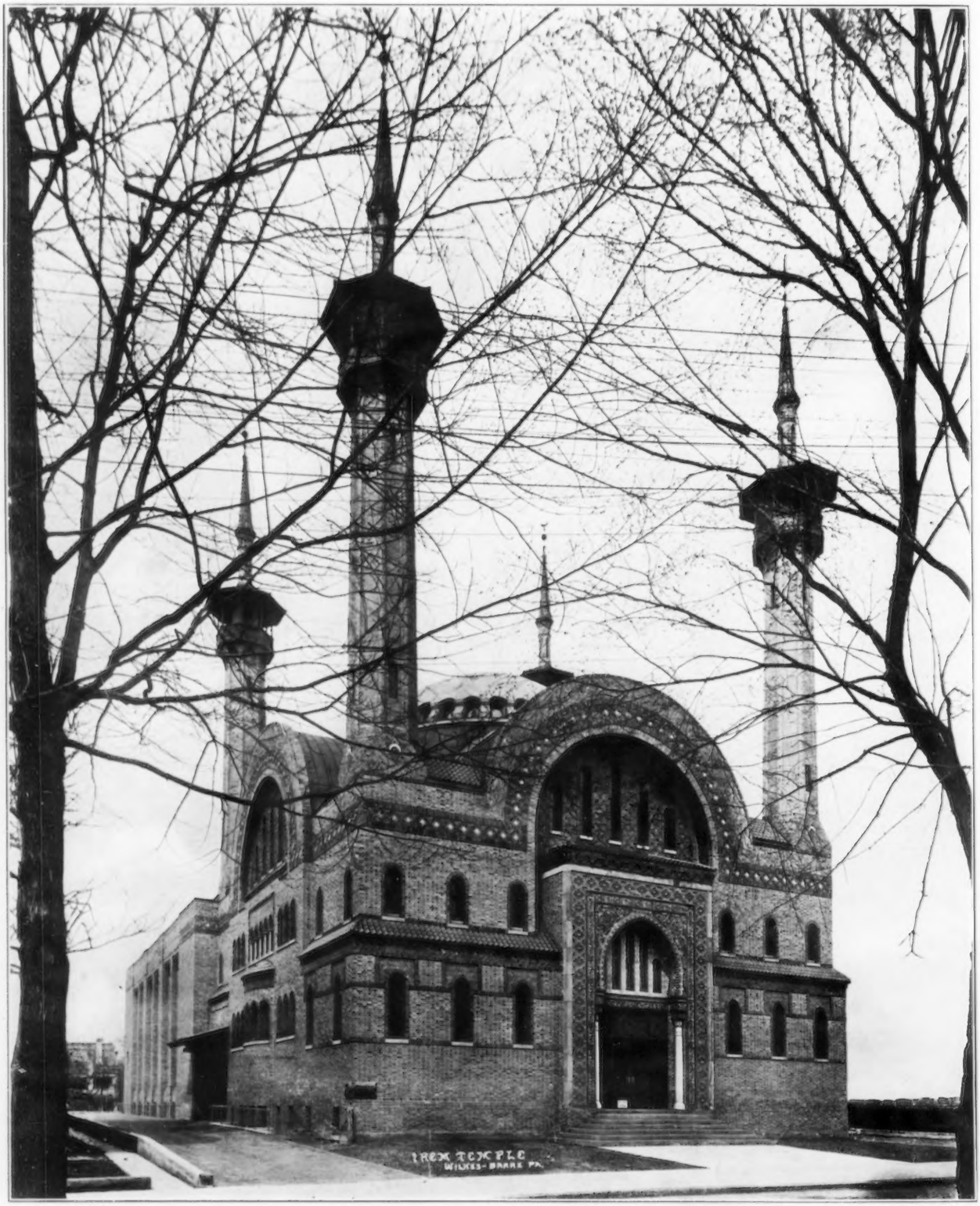
In operating rooms it is important that both top and bottom vent openings be provided, as in the use of ether and chloroform the fumes of one rise to the ceiling while the fumes of the other settle to the floor. It is customary to provide a separate fan for the ventilation of the operating room, especially because it is desirable to provide for the rapid removal of the air immediately following an operation.

In every fresh air and vent flue there should be provided a volume or adjusting damper by means of which the amount of air to be supplied to or removed from the room may be regulated. In the case of an air opening into a room placed above the level of the head a velocity of the entering air of 300 feet per minute may be safely permitted, while in the case of an opening placed below this level a velocity of 150 feet per minute is the maximum permissible and 100 feet per minute is often desirable, as in the case of operating rooms or openings placed near beds.

In hospitals and schools it is becoming common practice to omit the registers at the air openings. The architect tries to eliminate all square corners and recesses for the collection of dust so that there would seem to exist no warrant for putting in a register or register face which has a multitude of small corners in which and back of which dust may collect. A neat sheet metal outlet box to which the plaster may be brought is installed without the register, and in the case of the fresh air inlet deflecting plates are usually included in the outlet box to diffuse or divide the current of air and so reduce the velocity as it enters the room.

Hospitals designed for certain diseases require special treatment, as in the case of hospitals for contagious diseases, in which special care must be used in the arrangement of flues and an extra amount of air must be provided, or as in the case of hospitals for tuberculosis patients, in which it is customary to open the wards to the outdoor air at various times, in view of which requirement the system should be designed to make possible the rapid heating of the rooms.

In the hospital special consideration should be given to the matter of the location of the boiler plant. If possible it should be placed in an outside building because



IREM TEMPLE, WILKES-BARRE, PA.
OLDS & PUCKEY, ARCHITECTS.

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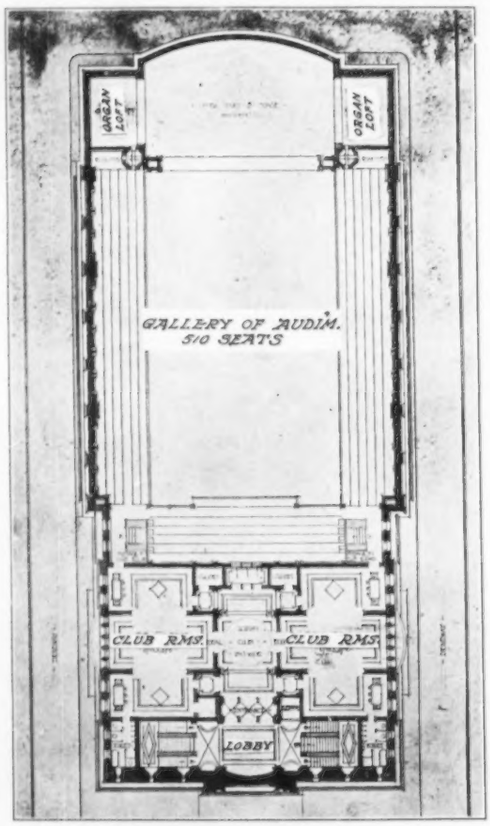
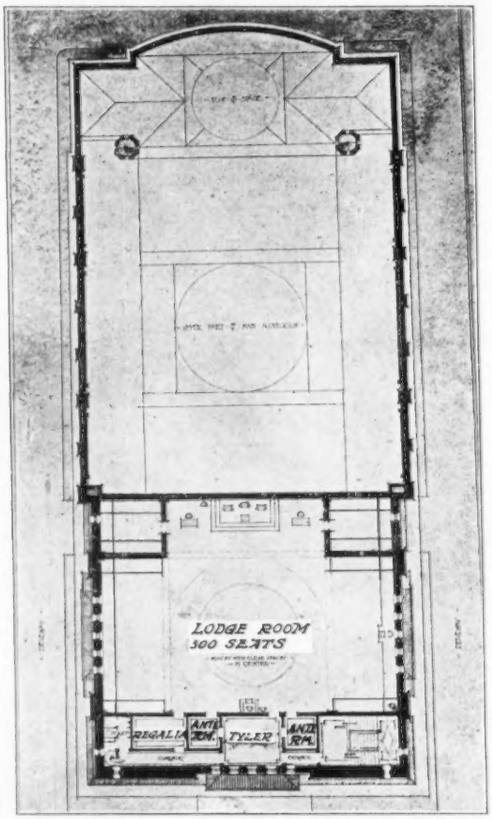
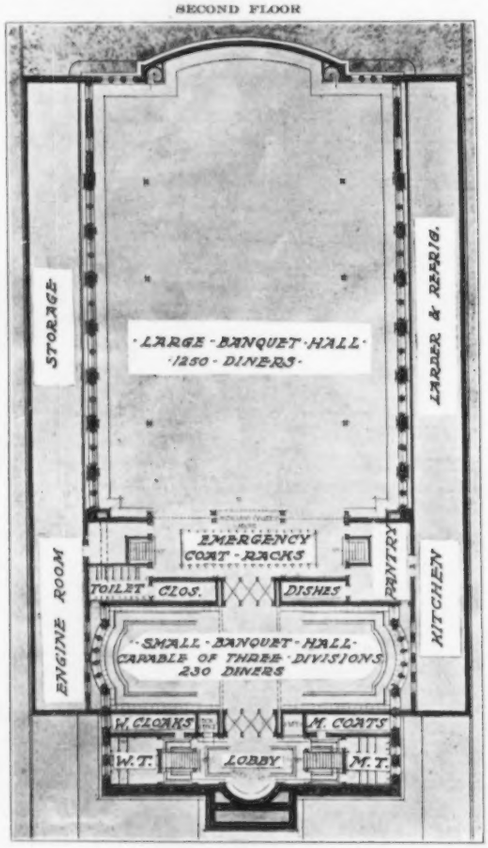


SECOND FLOOR

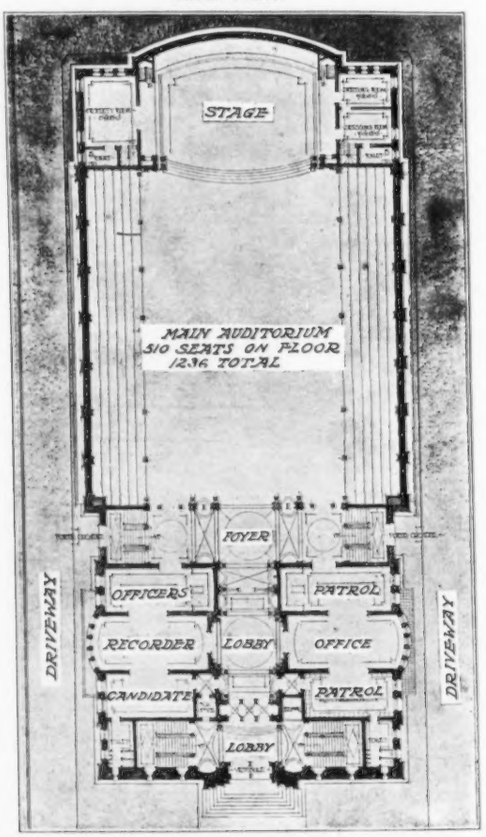


THIRD FLOOR

FLOOR PLANS, IREM TEMPLE, WILKES-BARRE, PA.
OLDS & PUCKEY, ARCHITECTS.



BASEMENT



FIRST FLOOR

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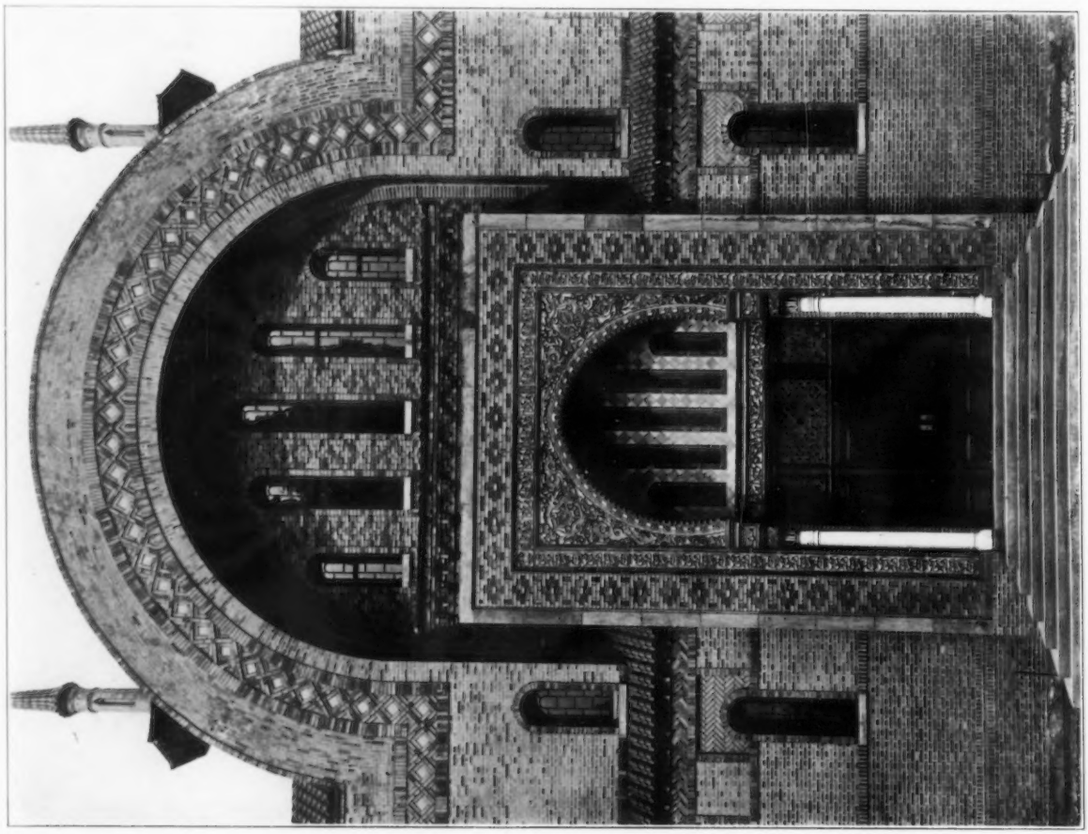

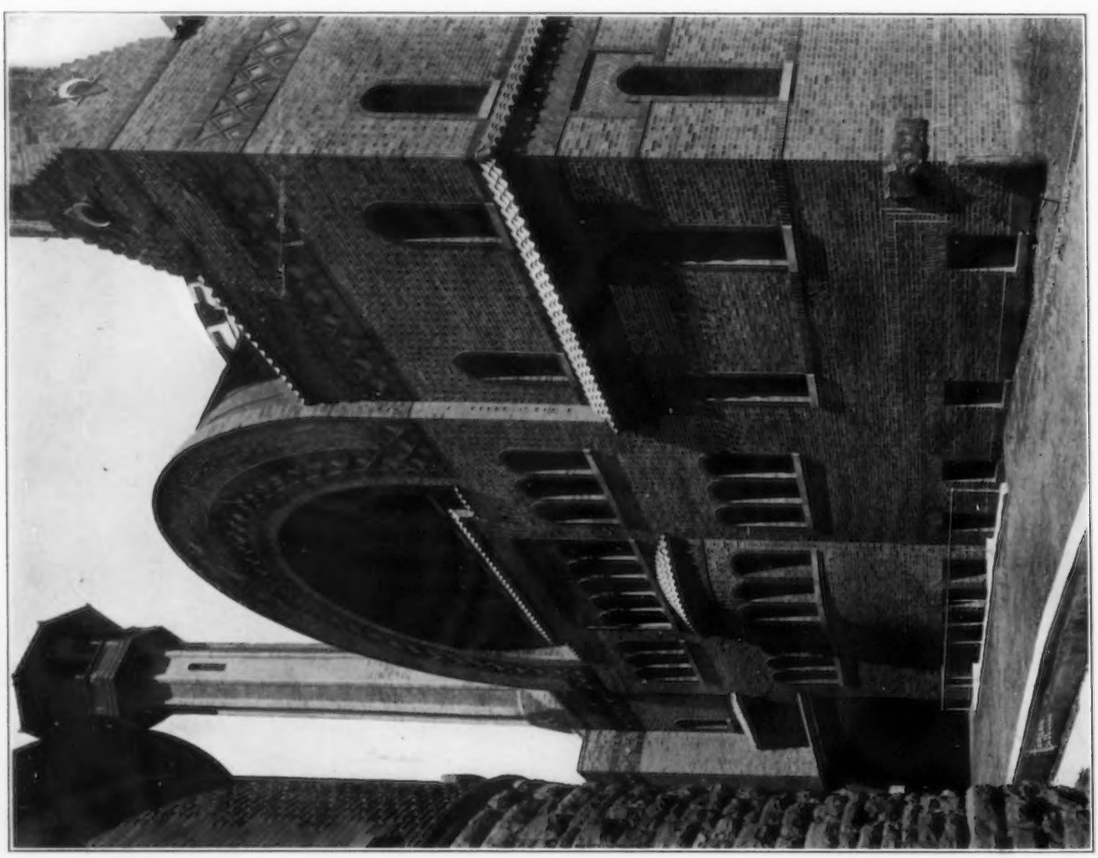

DETAILS, IREM TEMPLE, WILKES-BARRE, PA.
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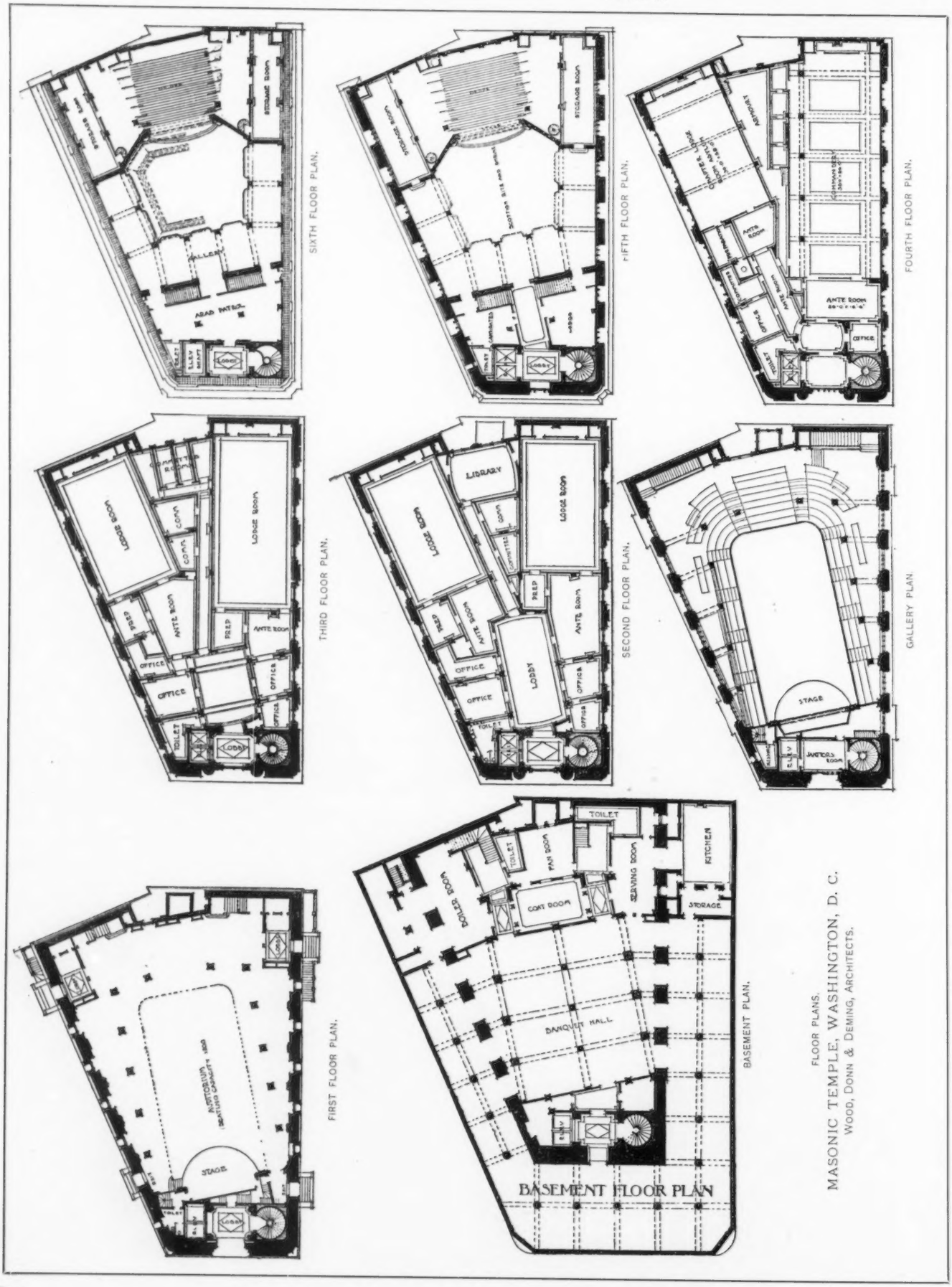
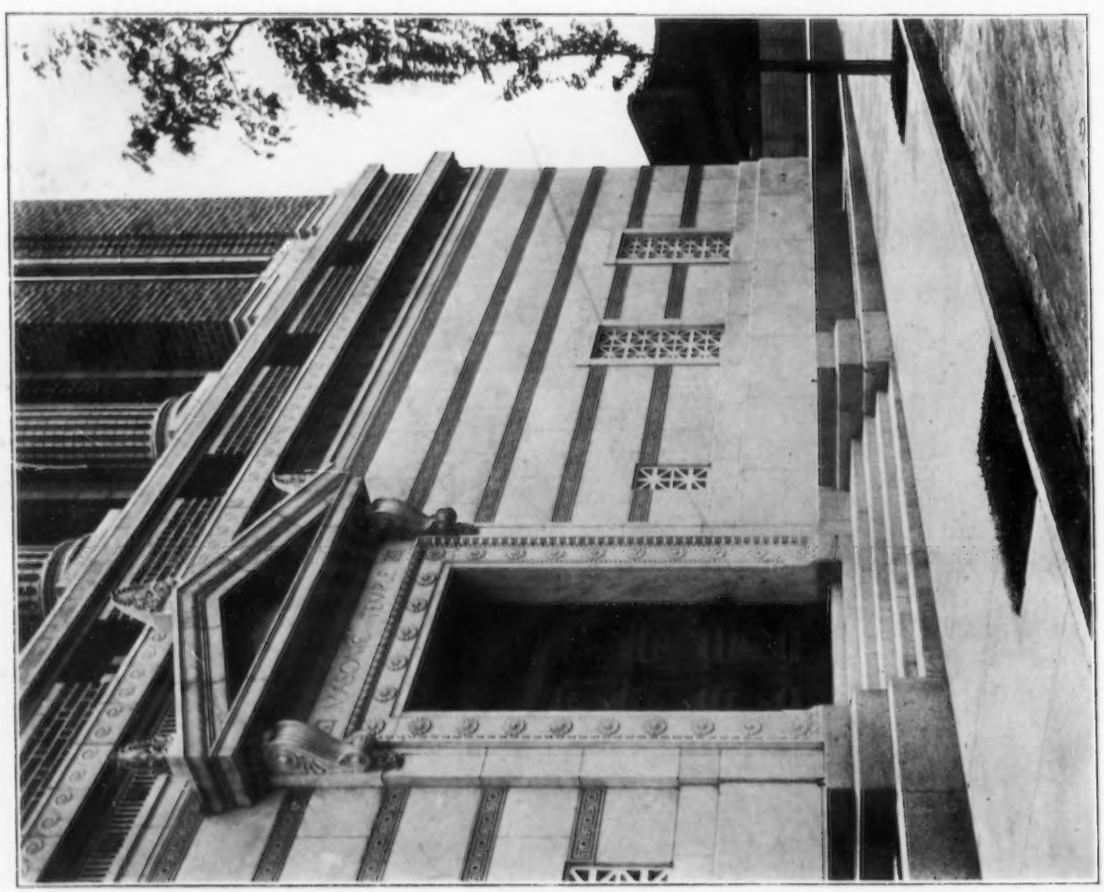


FLOOR PLANS.

MASONIC TEMPLE, WASHINGTON, D. C.

WOOD, DONN & DEMING, ARCHITECTS.

MASONIC TEMPLE, WASHINGTON, D. C.
WOOD, DONN & DEMING, ARCHITECTS.



DETAILS, MASONIC TEMPLE, BROOKLYN, N. Y.
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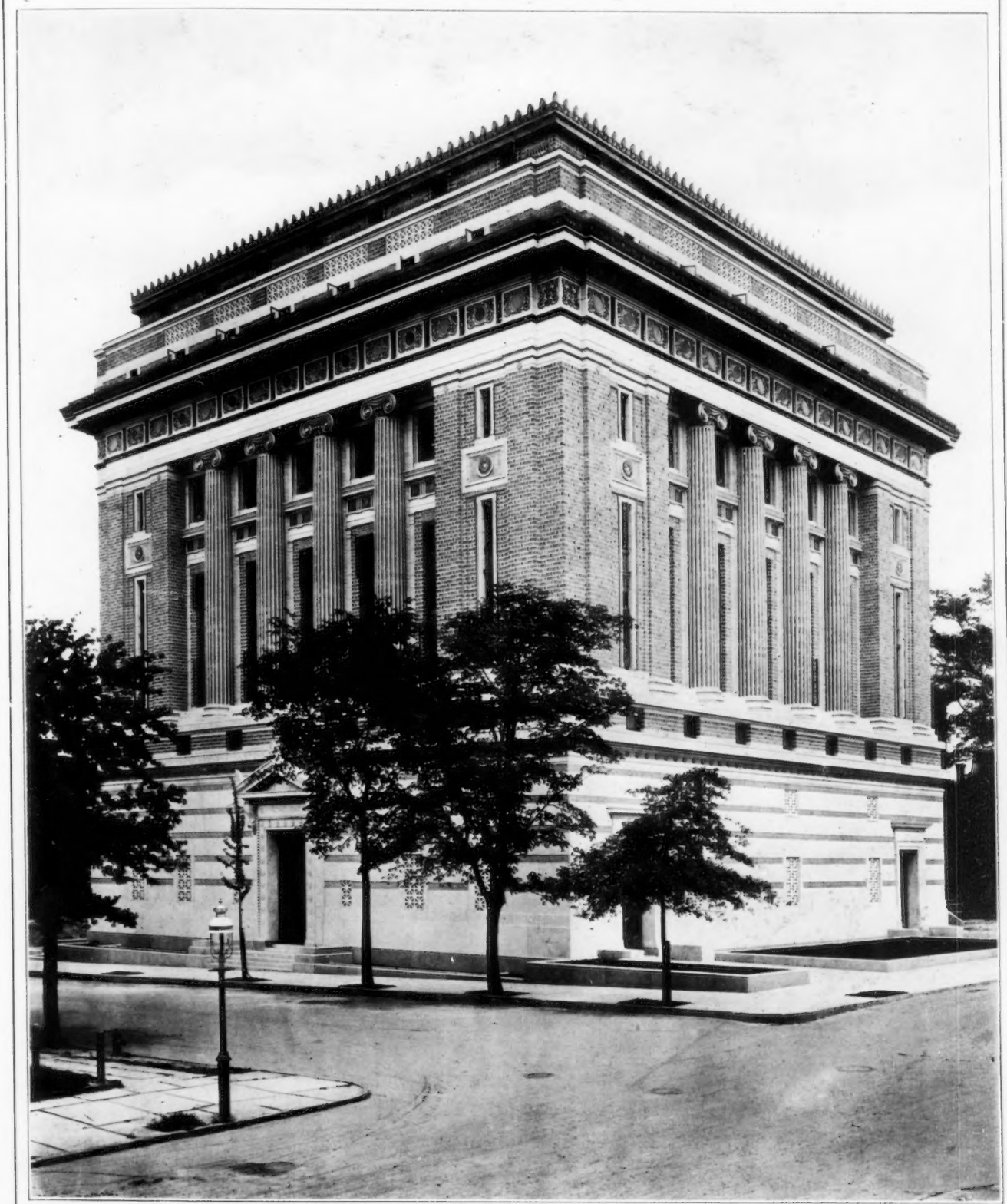
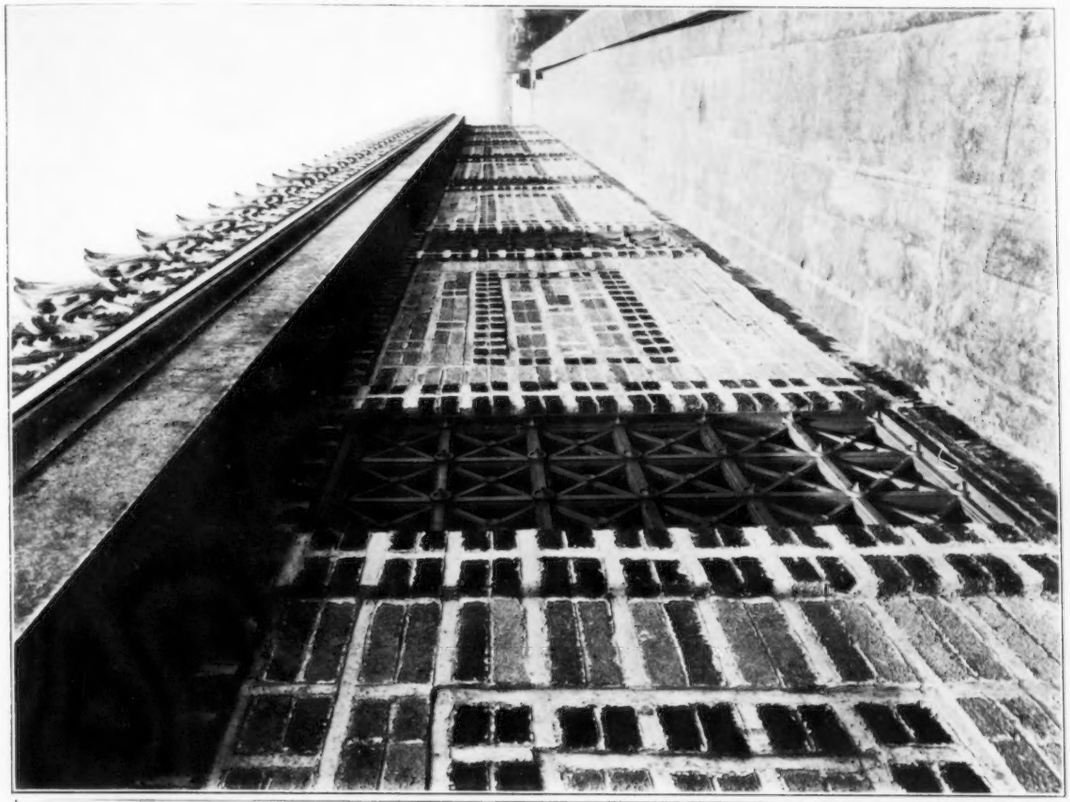
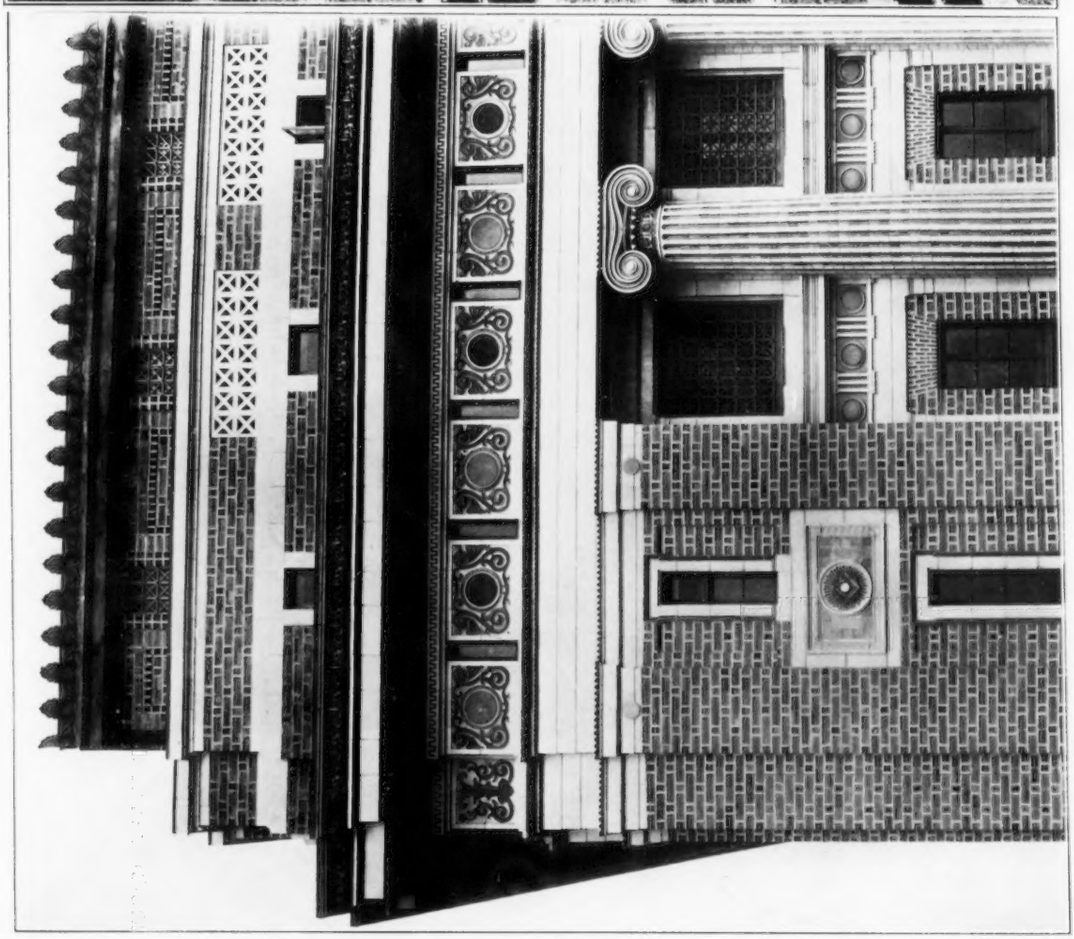
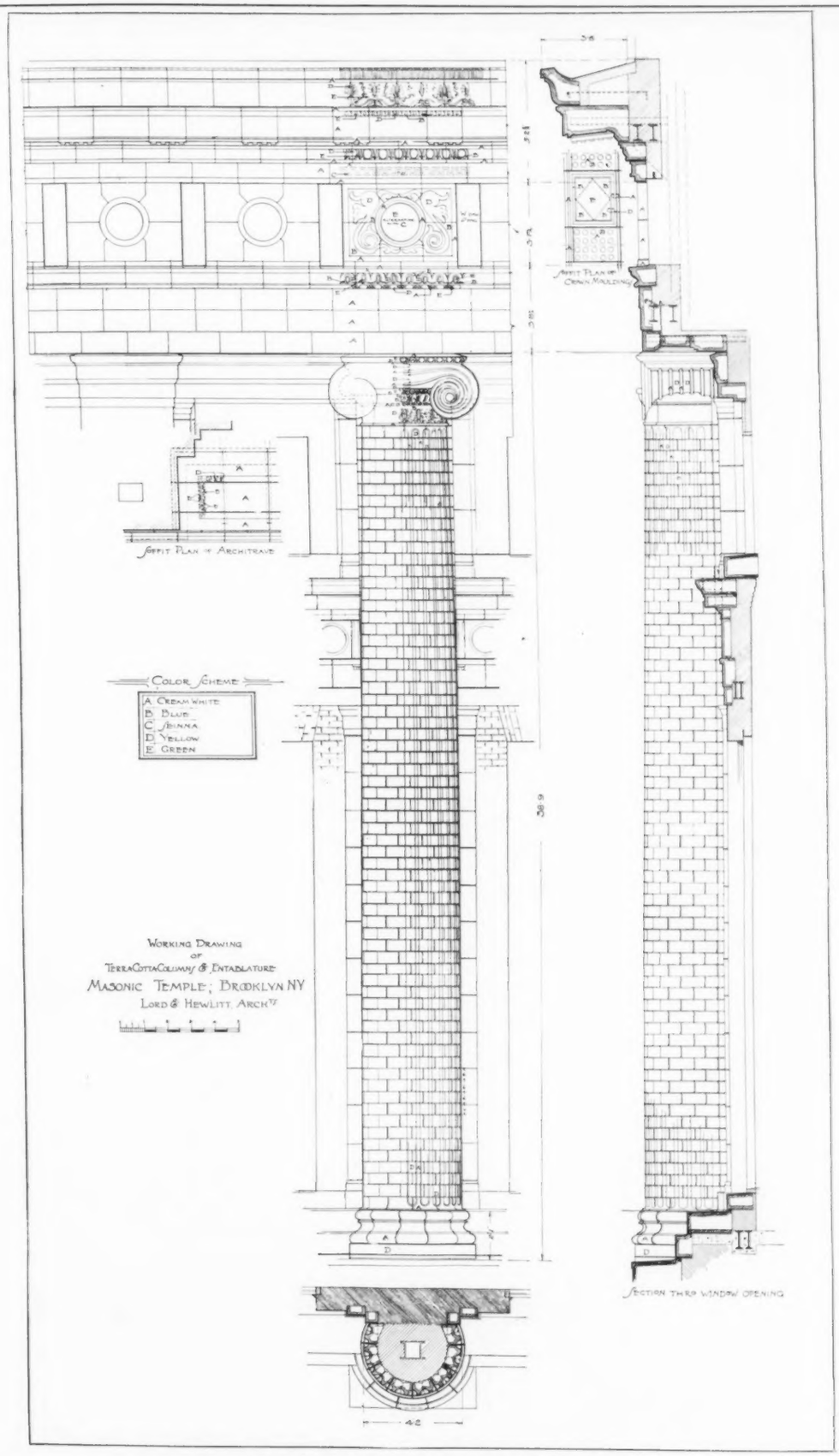


MASONIC TEMPLE, BROOKLYN, N. Y.
LORD & HEWLETT, ARCHITECTS, PELL & CORBETT, ASSOCIATED, ARCHITECTS.





DETAILS, MASONIC TEMPLE, BROOKLYN, N. Y.
LORD & HEWLETT, ARCHITECTS, PELL & CORBETT, ASSOCIATED, ARCHITECTS.



DETAILS, MASONIC TEMPLE, BROOKLYN, N. Y.
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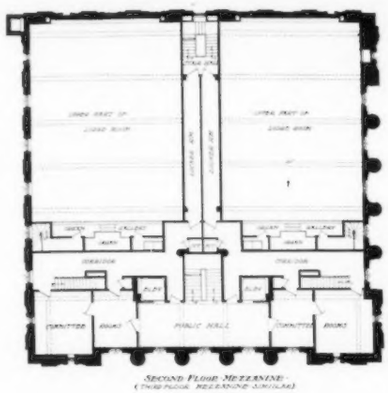
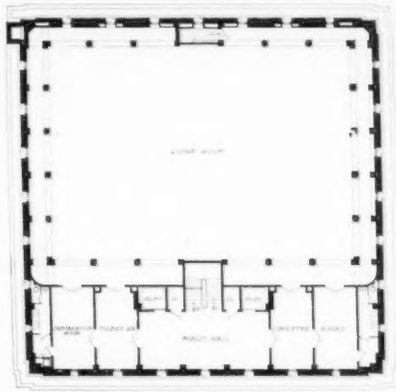
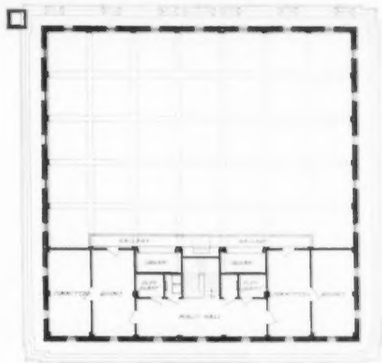


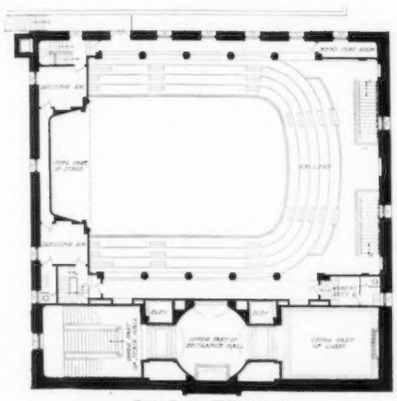
SECOND FLOOR MEZZANINE.
(THIRD FLOOR MEZZANINE SIMILAR)



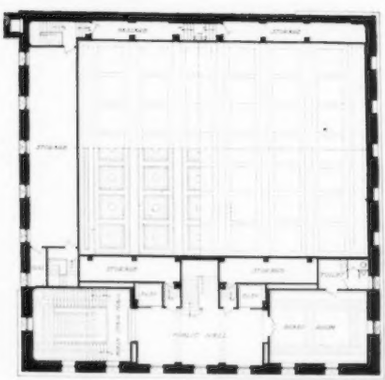
FOURTH FLOOR PLAN.



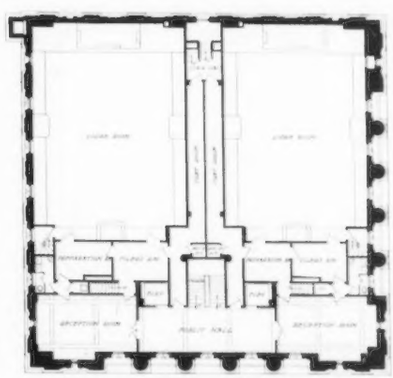
FOURTH FLOOR MEZZANINE.



FIRST FLOOR 1M MEZZANINE.



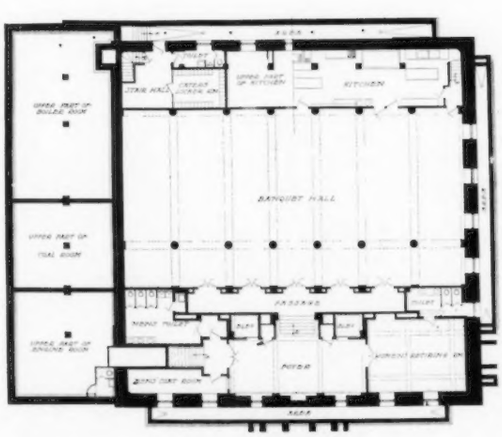
FIRST FLOOR 2M MEZZANINE.



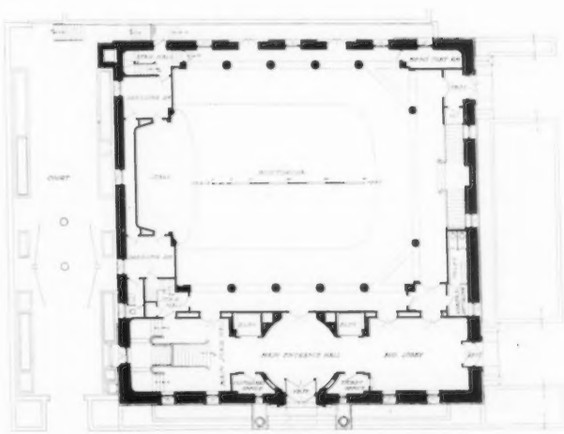
SECOND FLOOR PLAN.
(THIRD FLOOR SIMILAR)

FLOOR PLANS, MASONIC TEMPLE, BROOKLYN, N. Y.

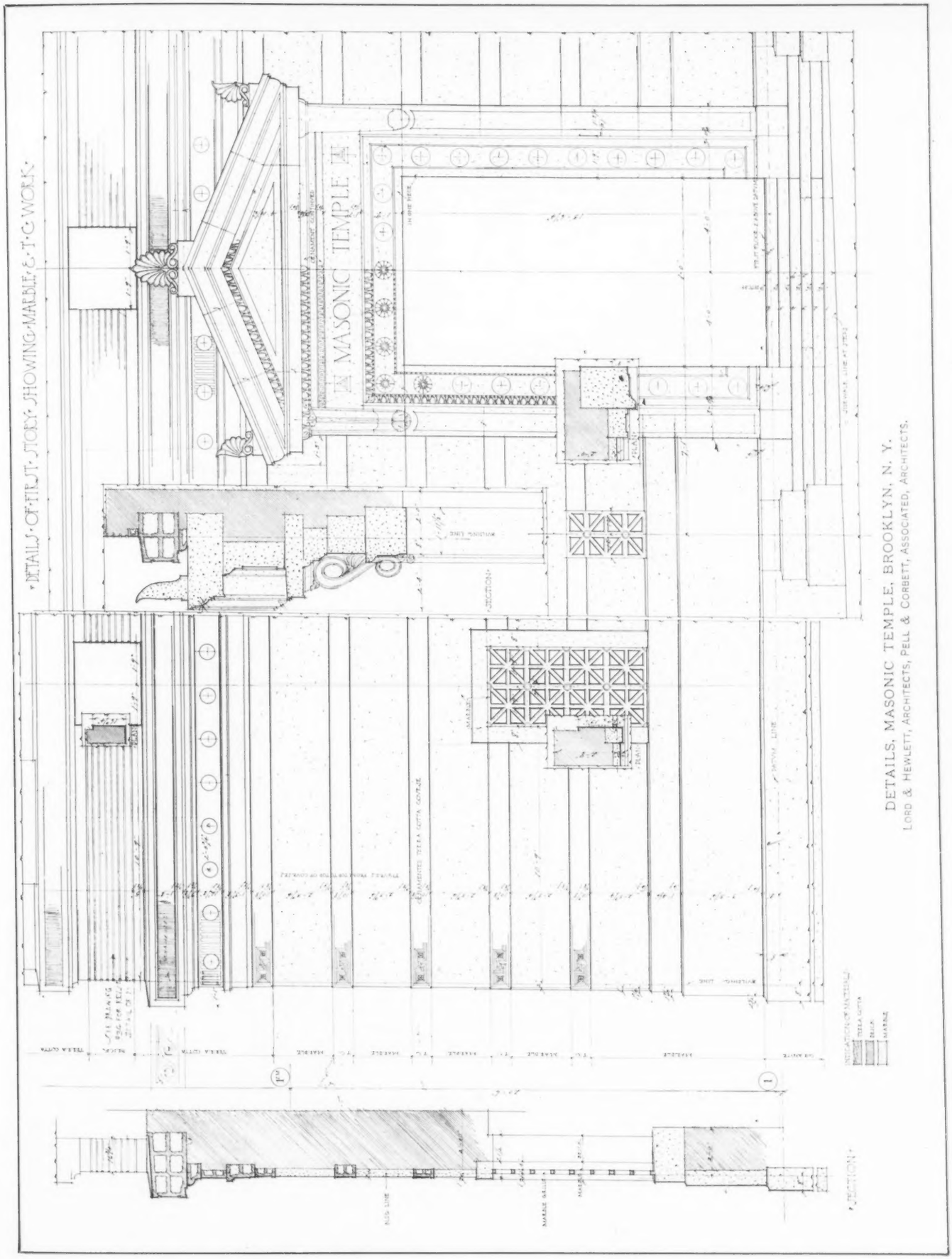
LORD & HEWLETT, ARCHITECTS.
PELL & CORBETT, ASSOCIATED, ARCHITECTS.



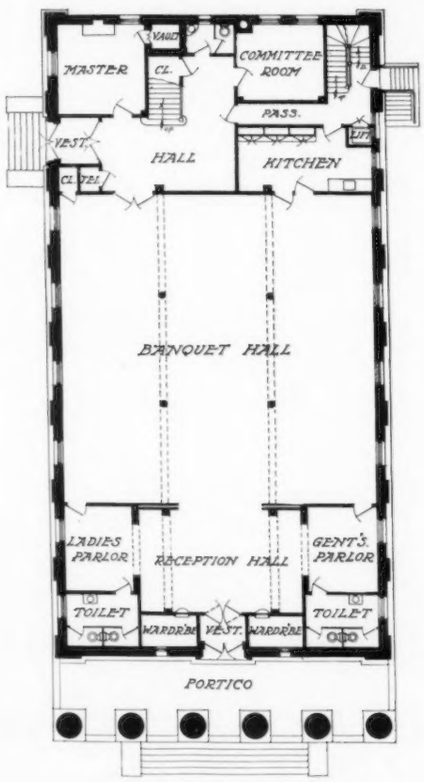
BASEMENT PLAN.



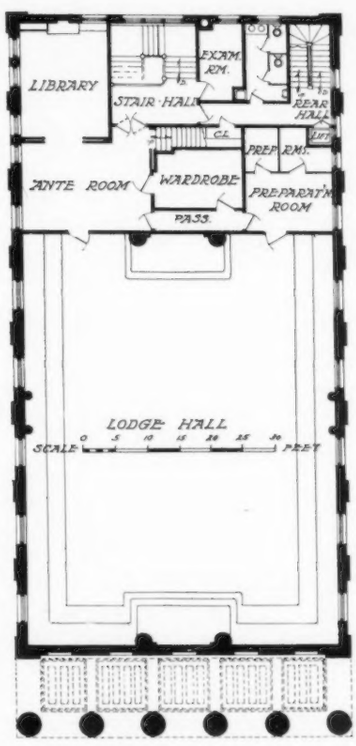
FIRST FLOOR PLAN.



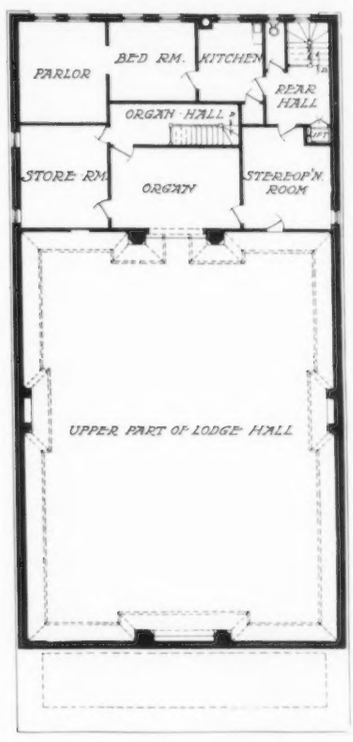
DETAILS, MASONIC TEMPLE, BROOKLYN, N. Y.
LORD & HEWLETT, ARCHITECTS, PELL & CORBETT, ASSOCIATED, ARCHITECTS.



·FIRST·FLOOR·PLAN·

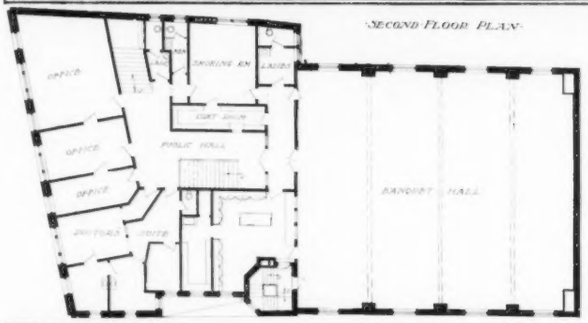


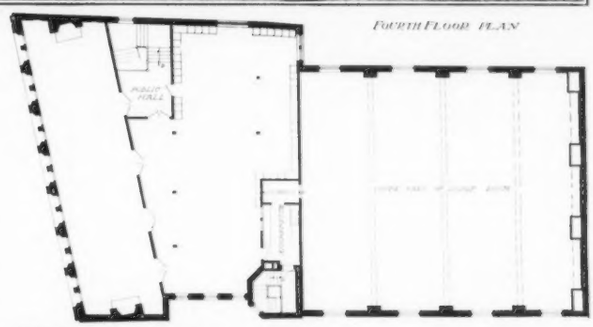
·SECOND·FLOOR·PLAN·

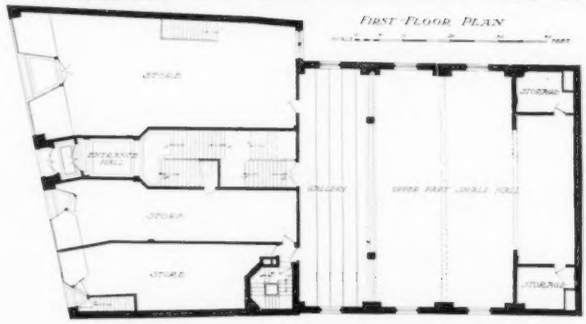


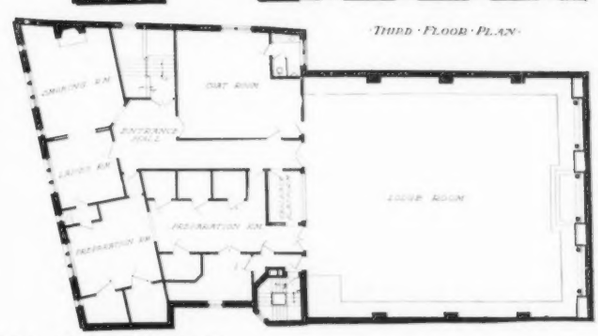
·MEZZANINE·FLOOR·PLAN·

TUSCAN TEMPLE (MASONIC), ST. LOUIS, MO.
ALBERT B. GROVES, ARCHITECT.









ODD FELLOWS HALL, MALDEN, MASS.

NEWHALL & BLEVINS, ARCHITECTS.

of the desirability of removing as far as possible from the building the noise, gases, and dust incident to the operation of the plant. If the hospital consists of a group of buildings a central plant is in every way desirable, not only for the above reasons but because of the increased economy of operation and decreased cost of maintenance. Such a plant may, to advantage, be combined with a lighting plant, which, because of the use of the exhaust steam in the heating plant, results in securing the necessary electric current at practically the cost of the interest and depreciation charge on the cost of the lighting plant. To such a combined plant is frequently added the laundry plant, vacuum cleaning plant, water filtration plant, etc.

In undertaking to give some rules and formulas it is possible to refer here to those only that are most commonly used with an aim to cover the needs of the average steam heating and ventilating system for a small building.

The warming system and the ventilating system of a hospital building are inseparably one. A system of ventilating can be made to accomplish both warming and ventilating, while every ventilating system requires for the greater part of the year the warming of the air provided thereby.

In the design of the plant there must be first determined the total amount of heat required to overcome the losses through the windows, doors, walls and skylights, roofs and floors, and in addition there must be determined the amount of heat carried out with the vitiated air removed by the ventilating system.

The unit of measure of heat is the British Thermal Unit, usually abbreviated to B. T. U. or termed "heat unit," which is the amount of heat required to raise one pound of pure water 1°, or to be exact, from 62° to 63° Fahrenheit. This equals 778 foot pounds, or 33,305 heat units equal one horse-power, and one pound of ice in melting is equal to 142 heat units. The importance of a clear understanding of this unit of measure is imperative as all heat calculations are based thereon. It should serve the heating and ventilating engineer as the two foot rule serves the carpenter.

With the required number of heat units known the radiator and boiler capacity is easily determined, and then the size of pipes and other details follow.

The use of a rule-of-thumb method of determining the radiation required cannot be too strongly condemned, particularly the method of allowing a certain number of cubic feet of space to each square foot of radiation. It is not uncommon to find in the same building some rooms requiring 1 square foot of radiation to 30 cubic feet of contents, while other rooms will require but 1 square foot of radiation to 200 cubic feet of space, the difference being due to the difference in the sizes of the rooms, the ratio of cubic contents to exposed walls and glass areas, the points of the compass, construction, etc.

For buildings made up of rooms of not over 12,000 to 16,000 cubic feet of space each, heated by direct radiation, Professor Carpenter's formula for determining the square feet of radiation required will be found very satisfactory.

This rule is as follows: Add together the area of the glass surface in square feet, one quarter of the area of the exposed wall, cubic feet of space times .04 (use .04 for the first floor rooms, .02 for rooms on upper floors, and .06 for halls, etc.), and multiply the sum of these three items by the proper factor taken from the following tables:

FOR DIRECT RADIATION.

	Temp. of Outside Air.	Temp. of Room.	Atmos. Pressure.	2 lbs.	10 lbs.	Hot Water.	
			212°	219°	240°	160°	180°
Steam.	+10	50	.16	.14	.12	.225	.20
	0	50	.20	.19	.15	.28	.25
	−10	50	.25	.21	.19	.33	.30
	+10	60	.21	.18	.165	.31	.30
	0	60	.25	.22	.196	.37	.35
	−10	60	.29	.26	.23	.44	.41
	+10	70	.26	.27	.22	.41	.34
	0	70	.32	.28	.245	.47	.40
	−10	70	.35	.32	.26	.55	.45
	+10	80	.33	.30	.24	.54	.435
	0	80	.38	.33	.27	.62	.50
	−10	80	.42	.38	.31	.70	.56

Ordinarily assume two pounds pressure in steam and 160° in hot water.

FOR INDIRECT RADIATION.

		Factor to obtain sq. ft. of Heating Surface.		Cu. ft. air per sq. ft. Heating Surface per hour.		B. T. U. per sq. ft. Heating Surface per hour.	
		First Floor.	Second and Third Floor.	First Floor.	Second and Third Floor.	First Floor.	Second and Third Floor.
Steam.	Zero to 70° Steam 212°	.73	.49	1 88	294	324	486
	Zero to 70° Steam 228°	.69	.46	1 96	294	338	507
	Zero to 60° Steam 212°	.46	.31	1 88	282	324	486
Hot Water.	Zero to 70° Water 160°	1.06	.70	1 28	192	220	330
	Zero to 70° Water 180°	.89	.59	1 50	225	260	390

212° equals atmospheric pressure; 228° equals five pounds pressure.

For first floor rooms with indirect radiation and having floor registers in the wall near the floor approximately fifty per cent more indirect radiation than direct radiation will usually be found to be required to do the same work.

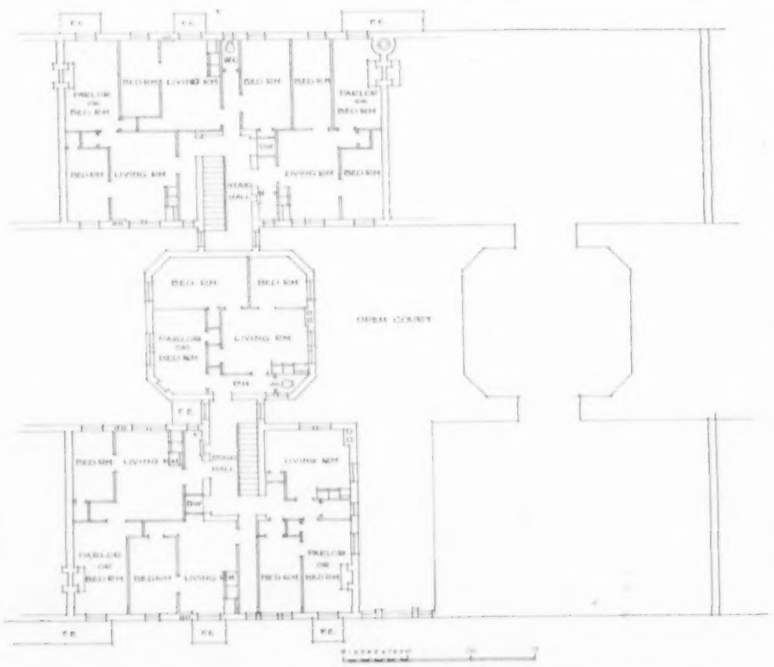
THE Campanile of St. Mark's has now reached such a height as to make an almost startling object-lesson on the terribly prosaic state of hardness, tightness, smoothness, novelty, and rigid repair in which the ages of antiquity possessed the buildings we hold venerable," says the London *Chronicle*. "It is a perfect facsimile of the original belfry tower of which the fall gave a shock to all hearts," it continues, "and that beautiful tower, before it fell, had a surface, a sweetness, an imperceptible disintegration which was the bloom of time. A random touch of green lodged between its bricks, thanks to the birds or the winds. Its successor is an almost hideous disappointment, and looks like nothing but a part of some monstrous factory."

The Housing Problem—IV.

BY GEORGE B. FORD.

IN THE illustrations of the previous articles we have studied what is being done in housing in the larger cities in America. In the text we have considered what can be done in the way of model housing. We will now consider what cannot be done with regard to housing, that is to say, we will see what is allowed and what is prohibited by the tenement code or buildings laws of the different cities of America.

New York City was the first to pass a tenement code, this some eight years ago. It was as the outcome of investigations, revealing an appalling state of affairs, that a restricting tenement code became an absolute necessity. This was soon followed by special tenement laws in Boston, Baltimore, Philadelphia, Chicago, Pittsburg, and Washington, and by state laws in New York, New Jersey, Pennsylvania, Connecticut, and Wisconsin. The tenement codes of Chicago, Baltimore, Cleveland, and San Francisco are considered the best. The constitutionality of tenement house legislation was determined by a final decision in the United States Supreme Court in 1906. In these tenement codes the question of safety and health are taken up in some detail, but the question of comfort as affecting housing is barely touched upon. This is as should be expected because safety and health are far more vital than comfort. The question of safety is considered only in regard to safety from fire, and health; in relation to light and air, sanitary arrangements, cleanliness, and over-crowding.



FIRST PRIZE DESIGN, SUBMITTED IN COMPETITION FOR NEW YORK MODEL TENEMENT.
Harde & Short, Architects.

DEFINITION OF TENEMENT. In New York, New Jersey, Pennsylvania, and Connecticut, and in the cities of Cleveland, San Francisco, Washington, Minneapolis, St. Paul, Denver, Rochester, Syracuse, Columbus, and Los Angeles, a tenement house is defined as a building which is occupied as a residence by three or more families living independently of each other and doing their own cooking on the premises, or by two families or more on one floor so living and cooking. Chicago, Milwaukee, and Toledo include all houses occupied by two or more families; Boston, Baltimore, Providence, and Kansas City fix the limit at four or more families or three or more families on any floor.

FIREPROOF TENEMENTS. In New York, Rochester, Louisville, Denver, and New Jersey every tenement house over six stories in height must be fireproof. In Chicago, Boston, Cleveland, San Francisco, and Washington all over five stories must be fireproof, while in Pennsylvania, St. Paul, and St. Louis all tenements over four stories must be fireproof.

WOODEN TENEMENTS. New York, New Jersey, Boston, St. Louis, Milwaukee, Cleveland, Providence, Washington, Toledo, Kansas City, Syracuse, Cincinnati, and San Francisco limit wooden tenements to three stories in height, with a maximum of accommodation of three families, or two stories in height with two families per floor.

FIRE ESCAPES. New York and New Jersey require a fire escape opening directly from one room in each apartment in each story above the ground floor. These fire escapes are elaborately detailed as to construction, with angle of stairs, etc. Chicago is nearly the same, not quite as stringent, while most of the other cities require some sort of fire escape on all tenements over three stories in height.

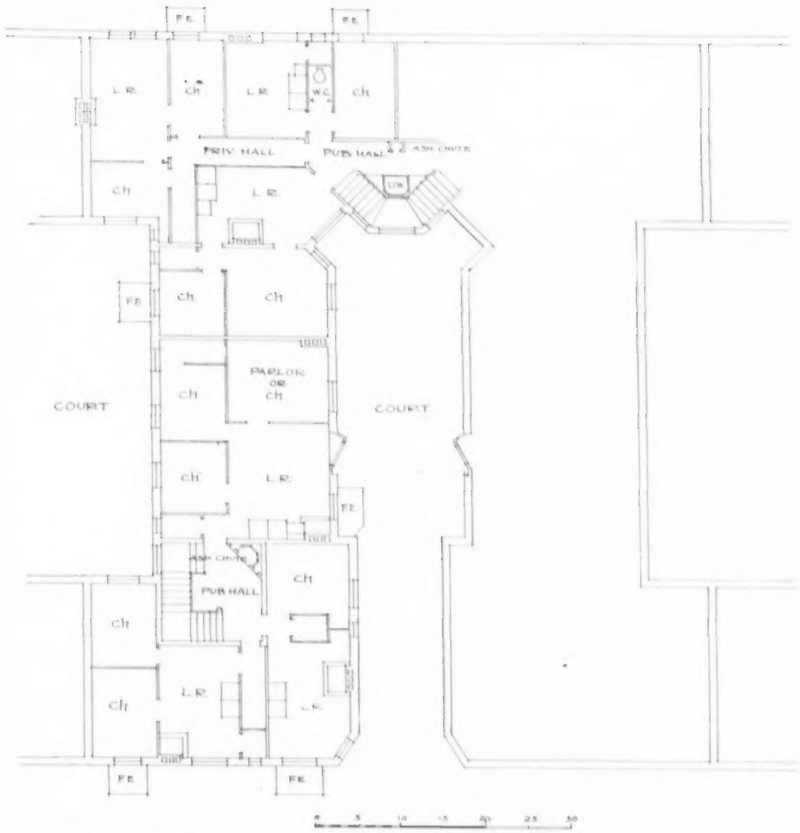
STAIRWAYS. In New York and New Jersey every tenement must have at least one flight of stairs from entrance to roof at least 3 feet wide. This shall be fireproof throughout. In Chicago and Cleveland every tenement must have two flights of stairs from entrance to roof, to which every apartment should be accessible. Boston, San Francisco, and Providence are similar to New York.

HALL AND STAIR PARTITIONS. In New York, Chicago, Cleveland, and St. Louis the stair hall with its entrance from the street must be enclosed on all sides with fireproof non-combustible walls, and the doors opening on to

these must be fireproof and self-closing. In New Jersey and Boston these partition enclosing walls may be of wooden studs with wire lath.

Shafts. In every city light and vent shafts and elevator and dumb-waiter shafts must be fireproof throughout.

General. In nearly every city it is required that in every tenement house living or sleeping rooms should have at least one window openiag directly on a street, yard, or court, the top of which window shall be within one foot of the ceiling.

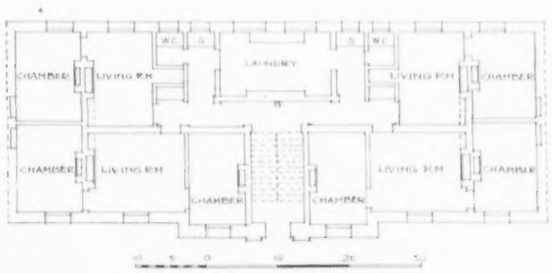


SECOND PRIZE DESIGN, SUBMITTED IN COMPETITION FOR NEW YORK MODEL TENEMENT.
Israels & Harder, Architects.

Height of Tenements. New York, New Jersey, Chicago, Baltimore, and Cleveland limit the height of tenements to one and one half times the width of the widest street on which the building faces. The same is true in San Francisco except for fireproof structures. In Boston the limit is two and one half times the width of the street with a maximum height of 125 feet. In St. Louis tenements are limited to 150 feet and those on streets 60 feet or less in width, to two and one half times the width of the street. Washington limits all tenements to the width of the streets between building lines with a maximum height of 90 feet. Providence limits all to 90 feet unless fireproof. Rochester permits no tenement to exceed in height four times its horizontal dimension. In Liverpool, Glascow, and Berlin, tenements are limited in height to the width of the street, and in Edinburgh to one and one quarter times the width of the street. In Paris the height limitation averages about one and one half times the width of the street.

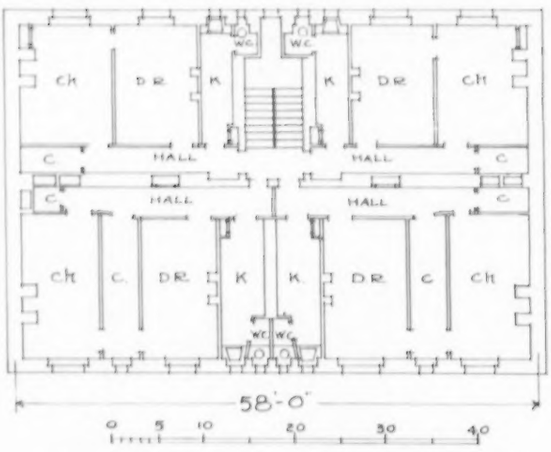
Percentage of Lot Occupied. New York and Baltimore allow seventy per cent of an interior lot to be occupied. Connecticut, Chicago, San Francisco, and Washington allow seventy-five per cent to be occupied. Cleveland allows only sixty-five per cent to be occupied. For corner lots New York, Connecticut, Cleveland, Baltimore, and Washington all allow ninety per cent to be occupied. Chicago allows eighty-five per cent and San Francisco ninety-five per cent to be occupied.

Yards. In New York at the rearof every tenement house on an interior lot there must be a yard extending across the whole width of the lot at least 12 feet deep and this depth shall be increased 1 foot for every 12 feet of added height above 60 feet. The same shall be deducted for every 12 feet below 60 feet, with a minimum depth of 10 feet. On corner lots the rear yard must be 10 feet in depth. In New Jersey the rear yards for tenements 50 feet in height must be 16 feet deep. In Pennsylvania the rear yard must occupy twenty per cent of the area of the lot and never be less than 8 feet in depth. On corner lots this is reduced to ten per cent. The Connecticut law is similar to the New York law. In Chicago the rear yard of interior lots must occupy ten per cent of the area of the lot with a minimum depth of 10 feet. In corner lots the rear yard should equal eight per cent of the lot. In Boston, tenements 50 feet high or less must have a rear yard 12 feet deep, which increases 1 foot in width to each additional 10 feet in height above 50 feet. For corner lots the yard must be at least 6 feet wide and should increase correspondingly. Balti-



BLOCK 3—PEABODY AVE.
PIMLICO BUILDINGS, PEABODY TRUST, LONDON.

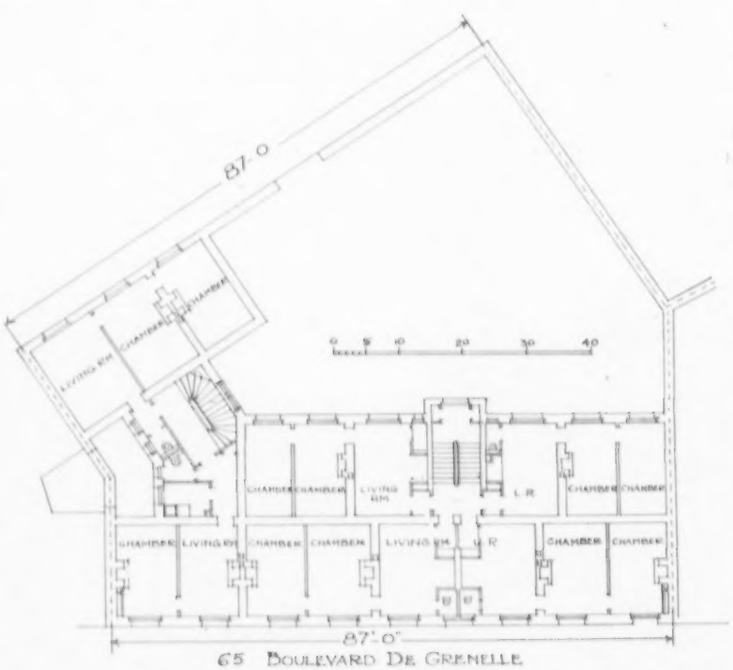
more and San Francisco are similar to New York. In Cleveland buildings up to 40 feet high on interior lots must have a yard 10 feet wide and for each additional 12½ feet the yard must be increased 1 foot in depth. Washington requires a yard 10 feet deep on an interior lot, and for each additional foot over 20 feet in height of a building the yard must be increased 6 inches in breadth.



MODEL TENEMENT AT 14 RUE JEAN ROBERT, PARIS.

In London the rear yard must contain 150 square feet and be at least 10 feet in depth. In Manchester, England, the rear yard must contain 250 square feet, in Liverpool, 150 square feet and 10 feet of depth for buildings under 30 feet high, and 15 feet of depth for buildings over 30 feet high. Dundee, Scotland, requires the yard to equal in area one third of the lot area. Edinburg requires the yard to equal three quarters of the area of the lot occupied by the building, and if the building exceeds four stories in height the area of the yard must equal the area of the building.

Courts. In New York outer courts on lot line must be 6 feet wide for tenements 60 feet high and increased or decreased 6 inches in width for each 12 feet added or subtracted from the above 60 feet in height. If the length of the court exceeds 65 feet, its width must be increased 1 foot for every 30 or less feet above 65. Outer courts between wings or parts of the same building are double these figures. Inner lot line courts must be at least 12 feet wide and 24 feet long for tenements 60 feet in height, and increased or decreased 6 inches in width and 1 foot in length for every 12 feet, or fraction, added or subtracted from the above 60 feet, except that in tenements four stories or under in height, for only two families on a floor, courts may be 8 feet by 14 feet. Inner courts not on the lot line double these figures. Every inner court must be provided at its base with an intake from street or yard at least 3 feet wide by 7 feet high. In New Jersey outer courts on lot line for tenements over three stories in height must be 2 feet 8 inches wide. Inner lot line courts for tenements exceeding four stories in height must be not less than 8 feet by 14 feet, and increased 6 inches in width and 1 foot in length for every added 12 feet above 50 feet. Pennsylvania requires that the distance from every window in a tenement house to the party wall line opposite to it must be at least 8 feet. Courts and open spaces between tenement houses and between the wings of a tenement house must be 12 feet wide. Inner courts are forbidden. In Chicago inner courts for four story buildings must contain 160 square feet with 8 feet as least width. For six stories the inner court must contain 400 square feet with 16 feet as least width. For outer courts the least width is half of the above, except where the outer court is enclosed between wings, when the dimensions are the same as the above. In Boston outer lot line courts must be at least 6 feet wide for tenements 50 feet high or less. Between wings this is doubled. Inner lot line courts must be at least 8 feet wide for tenements 50 feet high, and must have an area of at least 80 square feet. Inner courts not on a lot line are double these figures. In Baltimore a four story tenement must have 225 square feet in its inner court with a minimum width of 8 feet. A six story tenement requires 350 square feet with 11 feet as minimum width. In Cleveland outer lot line courts for four stories must be 6 feet wide, and for six stories, 9 feet wide. Inner lot line courts for four stories must be 6 feet wide with a minimum area of 108 square feet; six stories high, 9 feet in width, with an area of 243 square feet. Courts not on the lot line are double these figures. In San Fran-

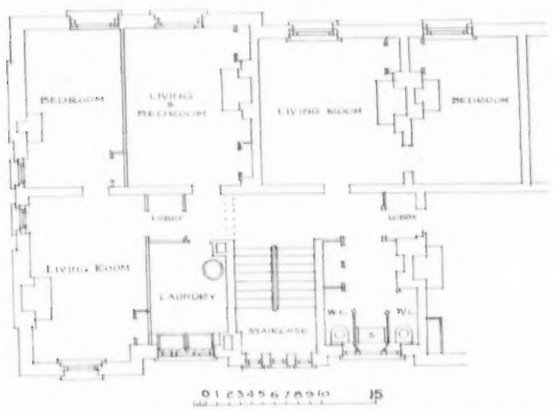


DWELLINGS FOR THE PHILANTHROPIC SOCIETY OF PARIS.

cisco outer courts for tenements four stories high must be 4 feet wide, and for six stories, 8 feet wide. For inner courts these widths are doubled with a minimum area of 160 square feet for four stories, and 400 square feet for six stories. London requires that the width of an enclosed court in front of a habitable room window should be equal one half the height measured from the window sill to the top of the opposite wall. Glascow requires that in front of at least one half of every sleeping room window there should be an open space equal to three quarters the height of the wall from the floor of the room to the roof. In Berlin outer courts must be 8 feet wide, and between opposite windows 20 feet wide.

Rear Tenements. In most cities rear tenements are forbidden. Where they exist, an open space of from 25 to 30 feet between them and the front tenement is required. In Chicago, Baltimore, Kansas City, and Columbus this open space is 10, 15, 20, or 25 feet according to whether the lower tenement is one, two, three, or four or more stories in height. Washington requires the difference between such buildings to be equal to one half the height of the tenement plus one half the height of the lower building.

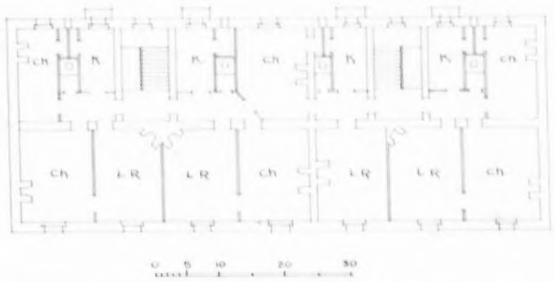
Air and Vent Shafts. Every vent shaft in New York 60 feet in height must have an area of at least 20



ASSOCIATED, SINGLE AND TWO ROOM TENEMENTS, WESTMINSTER BLOCK DWELLINGS, LONDON.

square feet. In New Jersey when 50 feet high, it must have 9 square feet of area. In Chicago, for a four story building, it must have 36 square feet, for a six story building, 72 square feet. In Boston, when 50 feet high, the area should be 15 square feet. In Cleveland, for four stories, the area should be 32 square feet, for six stories, 72 square feet.

Area and Height of Rooms. New York, New Jersey, Connecticut, Chicago, and Baltimore all require that every apartment shall contain one room with not less than 120 square feet of floor area, and that all other rooms except toilet rooms should contain at least 70 square feet. In Cleveland and San Francisco we find it the same except that the 70 square feet is increased to 80 square feet and in Boston to 90 square feet. In most cities water closets shall be at least 2 feet 4 inches wide. In New York, New Jersey, and Baltimore rooms shall be 9 feet in clear from floor to ceiling. In Connecticut, Chicago, Boston, Cleveland, and San Francisco, 8 feet 6 inches, while in Pennsylvania, St. Louis, Providence, and Grand Rapids they may be 8 feet. Most cities re-



MODEL TENEMENTS, RUE JEANNE D'ARC, PARIS. FIRST PRIZE, 1901 COMPETITION.

quire the window area of all habitable rooms to equal one tenth of the floor area.

Windows in Halls. Most cities require that all public halls in tenements should have windows opening directly to the open air.

Cellar and Basement Rooms. In most cities basement rooms may be occupied if 8 feet 6 inches in height with a ceiling at least 5 feet above the ground level.

Water Closet Accommodations. New York, New Jersey, Chicago, Boston, Cleveland, San Francisco, and Baltimore require a water closet within each apartment, provided that where apartments consist of one or two rooms, there must be a water closet for every three rooms.

Overcrowding. Most cities require that no living or sleeping room shall contain less than 400 cubic feet of air space for every person over twelve years of age and 200 cubic feet for every person under twelve. For Cleveland these figures become 500 and 300 respectively. In New Orleans 600 cubic feet are required per person, while in Denver the maximum is reached with 700 cubic feet. Four hundred and 200 cubic feet is the general requirement in Great Britain and on the Continent.

Cleanliness of Buildings. Every city has provisions for the inspection of tenement houses to see that the rooms, passages, stairs or water closets, cellars and courts of the houses be kept clean. In most cities there is further provision that the walls of all courts except such as face upon the street shall be whitewashed by the owner as often as the tenement department may require.

All the laws have provisions with regard to the administration and enforcing of their parts and into the details of which it is not necessary to go. These laws are excellent in a preventative way; they are good as far as they go, but they have an unfortunate tendency to prevent the development of new ideas in tenement planning, by throwing all sorts of obstructions in the way of any departure from the stock type. They do prevent a great deal of poor building and impossible arrangement, but they do not make it possible or advantageous for an owner to erect a tenement any better than the minimum required by law.

Note. — Further details in regard to these laws may be obtained from the excellent comparative summary of the Tenement Regulations of United States recently compiled by the Legislative Reference Department of the Wisconsin State Library at Madison, Wis.

Masonic Temple, Brooklyn, N.Y.

BY C. HOWARD WALKER.

ONE of the primary essentials of monumental architecture as taught in the schools, is that of the sense of the proportions of geometric solids in their relations to each other. The simplicity of an easily comprehended mass is in itself a far step towards architectural dignity, and when in addition to its planes and silhouette the details of its openings and of its embellishment are finely placed and in just proportions, there inevitably results monumental architecture of the best type. This statement is almost axiomatic, and is easily demonstrated by the consideration of a number of the noblest buildings of the past. Certainly the Pyramids are geometric solids pure and simple, and have been considered the epitome of dignity. The temples of the Greeks, the Mausoleums, whether square in plan like that of Halicarnassus, or circular like those of Augustus and of Hadrian, are simple geometric solids beautifully decorated with details, as are also the brick Campanile of North Italy and the Baptistries of Tuscany. Each of these has simple requirements of plan which can and rightly should be expressed by equally simple exteriors. It is the constant desire of the skilled architect to reduce the integral factors of his design to as few as possible as far as solids are concerned — to avoid eccentricities and unnecessary fantasy and finally to embellish adequately. When there appears a building which has all these attributes, which while containing a number of rooms of various sizes and several mezzanine stories has maintained great simplicity of mass associated with interesting detail, it is a natural conclusion that it has been thoroughly and well studied, and when in addition the scale of the detail has been carefully modulated to every portion of building and the areas of the different surfaces of tone and of color have been proportioned to each other, the further conclusion is that it has been intelligently and skilfully studied. Such a building is the Masonic Temple at Brooklyn, by Messrs. Lord & Hewlett and Pell & Corbett, associated. To have treated this building as a simple cube, which had monumental character at once from its mass, and then to have so proportioned an order upon its façades that the stylobate, order, and parapet are in admirable harmony while at the same time they accommodate and express the various mezzanine stories, is an admirable achievement.

Especially ingenious is the way in which two stories are obtained over the entablature without jeopardizing either the proportion or the weight of the parapet.

The windows immediately above the cyma, while entirely performing their work as light openings, are almost entirely concealed from below, and the setback of the top story and its change in tone completes the mass admirably. The whole method of obtaining two stories of windows above the entablature without losing the surface of the parapet and without making it too heavy is very successful. The relative scale of the detail to the various parts of the building has been carefully studied. The facias of the belt courses, broad in comparison with the curved moldings, give strong horizontal lines and shadows that define the factors of the mass. As has been mentioned, these factors are simple. There is a high stylobate containing the first floor and the first mezzanine.

The second mezzanine is contained within the plinth base of the order. The mistake of making the openings in this story too large or too high could very readily have occurred. As it is, they are longer than their height, and therefore are horizontal units, running with the plinth, not across it, and therefore becoming a part of it. It is perhaps open to question whether grills in these windows placed nearly upon the plane of the ashlar would not have still further maintained the integrity of the plinth, but probably the grills would have cut out too much light and have been impracticable. At first thought it seemed as if it would have been preferable to omit brick in this plinth course and to have made it wholly of light terra cotta, but perhaps this would have called attention to the window openings by contrast and have made them too important. Obviously the idea was to modulate the tones gradually into the brickwork, but it is doubtful if any such modulation is necessary between an order and the base upon which it stands. If this plinth course could have been all of terra cotta with windows with grills, it might have appeared a little more solid. This however is somewhat carping criticism, as the work is excellent as it is.

The order embraces three stories, when stories exist. It is the Ionic order of the Erectheion type. The stepped wall base is carried between the columns and softens the transition between the stylobate and order. The columns are engaged and are in antis, there being a double pilaster flanking the colonnade on the façade, with narrow windows between the pilasters. The corners of the building show beyond the outermost pilaster. Between the columns, about two thirds of the height of the shaft, is a Doric sub-entablature of terra cotta separating the two lower stories of the colonnade from the upper. This is carried on slender pilasters engaged with the columns. It is in excellent scale and well placed below the Ionic capitals. But a continuation of the belt is carried between the brick pilasters at either side of the colonnade as a panel with a roundel in the center. This panel appears to be the one detail which could have been improved. Before criticizing it, it should be acknowledged that it is very good as it is, but that it is open to the following suggestions: In the order, between base and epistyle, all the factors excepting the Doric belt are vertical in their motive. The vertical idea is echoed in the Doric belt by the triglyphs, but there is no such echo, nor is there a possibility of an echo in this isolated panel. It seems alone and interpolated. It is too heavy for the window trims above and below it, and its roundel is too conspicuous. All this does not appear on the elevation. It was the most natural thing possible to carry through the line of the Doric belt between the pilasters. In a building of one material where shadows alone count, it would have remained a minor detail, but with the contrast of brick and light terra cotta it becomes conspicuous. Perhaps its isolation is its chief fault, as no other portion of the building is unrelated to its adjacent parts.

There is one other detail of which a criticism is perhaps entirely a matter of personal prejudice, and may be put in the form of a question. When a building has delicate detail, and two grades of material, does not the

finer material and the more delicate detail rightly frame the openings, and is it well to put a coarse trim inside a fine one? This is apropos of the plain brick trims to the windows between the columns and within the delicate pilasters. It is evident that this was done because of the dark tone of the brick and to maintain darkness between the shafts, but could not this have been done with deeply molded terra cotta trims with detail that gave more shadow than high light? It is only fair to say that this criticism is one which does not in any way imply lack of success in the design as it is, but is made entirely as suggestion, and as suggestion which undoubtedly is open to discussion, but which in reviewing a piece of work of the undoubted merit of this building, induces what is hoped may be interesting speculative thought as to certain details.

Editorial Comment and Miscellany.

THE MASONIC TEMPLE, BROOKLYN.

THE Masonic Temple for the Brooklyn Masonic Guild is erected on the northeast corner of Lafayette and Clermont avenues on a plot with 100 feet frontage on Lafayette avenue and 195 feet on Clermont avenue.

In a building devoted to so many interests, the exterior is important. The dignity of the Masonic Order demands that its Guild be housed in a structure of imposing character. The building is divided, practically, into three vertical heights, which might be likened to the proportions of an ordinary pedestal with a very high base; the base of the pedestal covering the height of the auditorium, the die of the pedestal covering the two lodge room floors, and the cap of the pedestal covering the room devoted to the uses of the commandery, etc. The auditorium and lodge rooms on the second, third, and fourth floors have been given their due prominence in the composition of the exterior.

On a base of great height and simplicity are superimposed eight Ionic columns on each of two façades fronting on Clermont and Lafayette avenues. On the other two sides are flat piers or pilasters against the wall surfaces, all of which is crowned by a cornice of great richness with appropriate balustrade and superstructure.

To approach a good standard of exterior decoration and color treatment, without employing the expensive materials commonly used for these purposes, there has been employed a combination of colored terra cotta, marble and face brick; the marble and terra cotta being used in alternate courses in the base, the terra cotta and brick in the treatment of columns and caps, and the colored terra cotta in the main cornice and portions of the superstructure, the idea being to construct the lower portions of the building with great simplicity, increasing the richness as the crowning features are approached. The crowning story sets inside of the building line. The space here will be used for a roof garden, accessible from the fourth mezzanine story.

The Guild has provided ample lodge rooms with their accessories; a large auditorium for public uses, and a banquet hall for the uses both of the fraternity and of the public, all these functions of the building being so arranged as to be used at the same time without interference with each other. Separate entrances are provided to lodge rooms and to the auditorium and the auditorium lobby, or independently of them both.

Banquet Rooms and Kitchen. The banquet hall will be capable of division into at least three parts, all served from a common kitchen and capable of being used by both the lodges and the public without interference in the service, or used as one large room seating about five hundred people — should occasion require.

The kitchen arrangements are made to attain the most complete, direct, and rapid service possible, amply lighted and provided with all modern conveniences for the handling of supplies and for either the preparation of food or the serving of caterer's supplies. There is a small mezzanine over a portion of the kitchen for caterer's lockers and toilets.

Attention is called to the public accommodations in connection with the banquet hall, such as a large public lobby communicating directly with the main staircase and elevators and with the women's retiring room, men's coat room, and their respective toilets. Upon this floor also are the boiler room, storage for coal, and the necessary accommodation for elevator, machinery, and other equipment in connection with the general administration of the building.

First Floor. For public entertainment and for the further uses of the fraternity, a large auditorium seating about one thousand people occupies the principal portion of the first floor. The auditorium has a unique arrangement of seating, it being the intention at times to use it for balls and receptions. For this purpose a series of secret doors have been provided in the stage front, and the seats which are made in sections run under the stage on trucks provided for this purpose. By this means the entire floor can be cleared in a very few moments.

The stairway and elevator service is convenient to the private entrance and private lobby on Clermont avenue, and designed for the use of masonic bodies exclusively. Two entrances leading to the auditorium are provided on Lafayette avenue.

All the conditions incident to a perfectly equipped modern auditorium have been fulfilled. Ample entrances and exits, stage and dressing room accommodations are provided for. The main staircase at the left of the private entrance extends to the second mezzanine floor, the principal room on this floor being the library and public lobby, the remaining portion of the area being taken up by the upper portion of the auditorium.

The grand entrance lobby is finished in imitation caenstone and marble, with marble and terrazzo floors in ornamental design. Leading from this lobby is a spacious stairway of marble and ornamental iron to the floors above and to the banquet hall in the basement.

The finish throughout is quarter cut white oak, finished natural, with Georgia pine, parquette, tile and marble floors.

A first class system of heating, ventilation, lighting,

and plumbing has been installed, the heating being automatically controlled steam and forced draft. In most cases the radiators are concealed in wall pockets behind ornamental iron grills.

Above the auditorium are three important stories devoted to lodge rooms and their accessories in the way of spacious halls, reception rooms, tiler's and preparation rooms, coat rooms, committee rooms, dressing and toilet rooms.

ST. LUKE'S HOSPITAL, CLEVELAND, OHIO.
Roofed with Ludowici-Celadon Tile.
F. W. Streibinger, Architect.

SECOND AND THIRD FLOORS INCLUDING MEZZANINE FLOORS. The lodge rooms proper begin at the second floor. Attention is called to the very ample size of these lodge rooms, which are 37 feet by 57 feet and 39 feet 6 inches by 57 feet respectively. The various requirements of a lodge room are here shown, viz: commodious lobby convenient to the elevators and main stairways, large coat rooms, reception rooms, tiler's and preparation rooms, and private stairways leading to the committee rooms, and organ loft in a mezzanine story. The private stairway to the organ loft is accessible only from the lodge room. A mezzanine story over the coat rooms gives ample storage space for regalia and documents. The third and fourth floors have accommodations identical with the second.

The general arrangement of the lodge rooms, ante rooms, public halls, auditorium, and main staircase has been studied with a view to the absolute practical requirements necessary in a building of this character, and, further, to its future artistic embellishment as may be fitting in a building devoted to so important a purpose. With this end in view, it has been the aim of the trustees and the architects to arrive at the simplest arrangement possible and to give that proportion and symmetry to the various apartments which are so necessary to consistent and beautiful decoration.

The cost of the building was 40 cents per cubic foot, figured on a basis of a cube from the ceiling of the fourth floor mezzanine to the basement floor by the exterior dimensions.

The plans were drawn by Lord & Hewlett and Pell & Corbett, associated, architects, who were selected by competition into which fourteen competent architects had entered.

DETAIL BY WILLIAM L. ROUSE, ARCHITECT.
South Amboy Terra Cotta Company, Makers.

FIREPLACE BY CUDWORTH & WOODWORTH, ARCHITECTS.
Lower part in faience, modeled and executed by Hartford Faience Company.

MASONIC TEMPLE, WASHINGTON.

THE peculiar shape of the site made it possible to impress on the shortest but most important façade, facing fifty feet and eight inches on Thirteenth street, the character of the temple. The sides extend down New York avenue one hundred and thirty-two feet and six inches and H street one hundred and forty-four feet and three inches respectively, but here the windows are made much more archaic in character, and by their shape, size, and disposition lend mystic character to the structure.

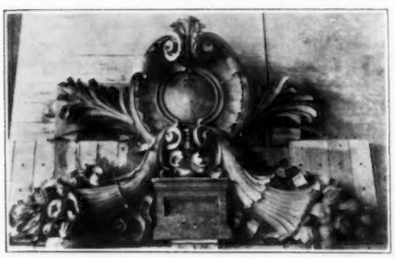
The building is six stories high, with the first story about thirty feet in the main auditorium, the total height being one hundred and ten feet above the sidewalk, the greatest height allowed by law on this site. It is heated by steam, and has a special system of ventilation for the auditoriums, banquet hall, lodge and locker rooms. The structure is fireproof

throughout, with steel-frame construction, — the exterior walls, however, are self-sustaining. The auditoriums and lodge rooms are practically free from columns with fifty-foot plate girders spanning from wall to wall.

The principal entrance is marked by a large semi-circular opening or doorway to distinguish it from the rectangular openings on the sides, which merely are entrances and exits to the auditorium.

LONGACRE BUILDING, 43D STREET AND BROADWAY, NEW YORK.
Executed in white mat terra cotta, having the texture of marble.
Atlantic Terra Cotta Company, Makers.
Charles A. Platt, Architect.

Basement. The main portion of the basement and vaults extending out under the sidewalks on three sides of the building, is devoted to an immense banquet hall, seating about eight hundred people. This room is readily accessible from the main auditorium room on the first floor, and by stairways and elevators from any of the lodge rooms.



DETAIL BY HELFENSTELLER, HIRSCH & WATSON, ARCHITECTS.
Winkle Terra Cotta Company, Makers.

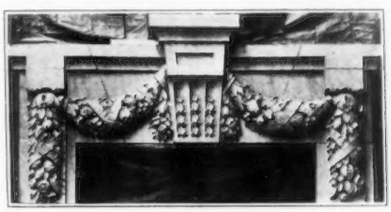
In connection to the banquet hall are two entrance halls with toilet for men, and toilet and dressing room for women, and coat and hat room. The service part consists of a large kitchen, storeroom, and service-room or pantry. Supplies can be brought in direct to the kitchen from the sidewalk.

The power part of basement consists of boiler and pump room, elevator machinery, coal vaults, and fan room for supplying fresh air to the banquet hall.

First Floor. A large auditorium, practically at sidewalk level, occupies almost the entire floor. This auditorium with gallery will seat almost eighteen hundred people. The room has been designed as a music hall, and has a grand organ for use of choral society or oratorio concerts as well as for especially largely attended masonic rites.

An especially fine floor has been provided in the auditorium for dancing, and when balls are given the banquet hall can be used as a supper room, with separate stairways, dressing, coat and toilet rooms as described under the "Basement."

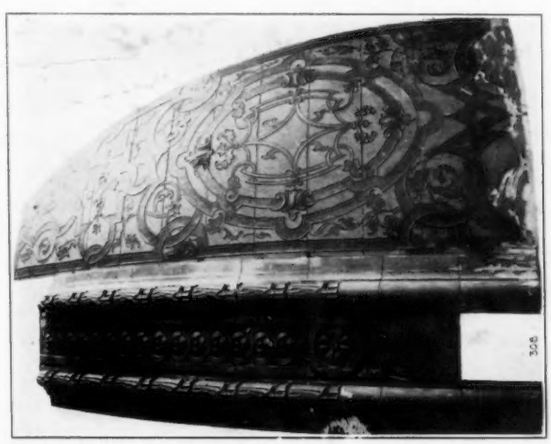
The auditorium is well provided with exits directly to the sidewalk. Practically it has an entrance at each of its four corners. Access to auditorium can also be had from main entrance lobby of temple by masons on occasions when auditorium is used by them. There is a large entrance lobby, with two elevators and stairway, which repeat on each floor. The lobby in every case is made quite architectural, it being the public part of each floor.



DETAIL BY ESENWEIN & JOHNSON, ARCHITECTS.
Atlantic Terra Cotta Company, Makers.

Second and Third Floors are given up to the Blue Lodges. There are four lodge rooms, with preparation and ante-rooms to each, together with committee rooms required, and offices for the use of grand officers.

There is a library on third floor in addition to the above.



DETAIL OF EXTERIOR OF DOME OF BUILDING FOR EVENING BULLETIN, PHILADELPHIA.
Executed by Conkling-Armstrong Terra Cotta Company.
Edgar V. Seeler, Architect.

Fourth Floor is devoted to Knights Templar, with asylum and commandery, ante-room, etc. Space is provided for eight hundred lockers.

Fifth Floor is for the Scottish Rite, with lodge rooms, preparation room, ante-rooms, and an auditorium with gallery and stage. This auditorium is intended to be used by both the Scottish Rite and the Mystic Shrine, which occupies the sixth floor, and seats about seven hundred in floor and gallery.

The stage is so arranged that the most elaborate

services of the Scottish Rite can be given in their entirety, with the ninety-nine sliding scenes required.

There are storage rooms on either side of the stage on the fifth and sixth floors.

Every floor has its toilet rooms.

The building cubes up to one million three hundred and sixty-eight thousand six hundred and ninety-six feet, which is figured from basement floor to average roof height. The complete cost of the building was $370,978.87, which is at the rate of about twenty-eight cents per cubic foot.

The architects were Wood, Donn & Deming.

CONGREGATIONAL CHURCH, ST. PAUL, MINN.
Built of variegated bronze brown brick, made by Twin City Brick Company.
Clarence H. Johnston, Architect.

IREM TEMPLE, WILKES-BARRE, PA.

THE building was erected for the Ancient Arabic Order of the Nobles of the Mystic Shrine. The entrance portal of this building is composed entirely of colored terra cotta with the exception of the two marble columns supporting the arch. The remainder of the building is in brickwork of ten different shades, ranging from a dark buff to a deep reddish brown. The roof is laid with red tile.

The total cost of the building, including everything except furniture, was $167,000. The building contains 826,000 cubic feet, measured from bottom of footings to an average of the height, which made the cost a trifle more than 20 cents per cubic foot.

Olds & Puckey, of Wilkes-Barre, were the architects, and the brick and tile work was erected by George T. Dickover & Son.

RECTOR BUILDING, CHICAGO.
Architectural terra cotta, made by American Terra Cotta and Ceramic Company.
Jarvis Hunt, Architect.

IN GENERAL.

Archie H. Hubbard has opened an office for the practice of architecture in Engineering Hall, Urbana, Ill.

F. Gordon Pickell has opened an office for the practice of architecture in the Union Trust Building, Detroit. Manufacturers' samples and catalogues desired.

Walter S. Gray has opened an office for the practice of architecture in the McCarthy Building, Roanoke, Va. Manufacturers' samples and catalogues desired.

Hydraulic-Pressed brick were used in the Masonic Temple, St. Louis, illustrated in this issue.

The third report of the Board of Architecture for the state of California has just been issued. It comprises the law, rules of the board, and list of certified architects. Frederick L. Roehrig, of Los Angeles, is the secretary of the board.

The Robert Fulton Monument Association of 3 Park Row, New York City, announces a competition among the architects of the United States for the purpose of securing designs for the memorial of Robert Fulton, costing $2,500,000, and to be erected in Riverside Park in the city of New York. Architects of experience and good standing are requested to apply to the association for forms on which to make application for the competition program and permission to have their names entered as competitors.

Prof. A. D. F. Hamlin, of Columbia University School of Architecture, has sailed for Constantinople, where he will make a survey of the Robert College property and draw plans for its future extension. Professor Hamlin was born in the Turkish capital, his father, Cyrus Hamlin, having been the founder of Robert College. Two of the present five buildings of the institution were designed by Professor Hamlin.

The roofing tiles for Irem Temple, Wilkes-Barre, illustrated in this issue, were furnished by the Ludowici-Celadon Company.

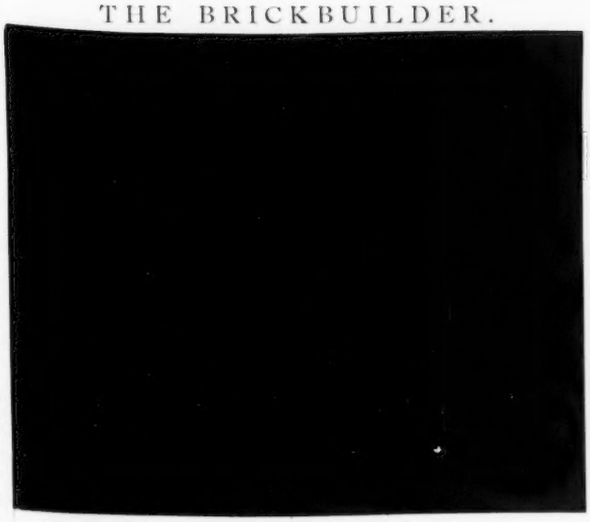
The Hydraulic-Press Brick Company furnished the brick for the Masonic Temple at Washington, illustrated in this issue.

The new Curtis Building, Philadelphia, Edgar V. Seeler, architect, will use six hundred thousand "Old English Colonial Red

Brick" made by Sayre & Fisher Company. The size of these bricks, which are made to match those which are used in some of the older buildings in London, is 9 by 4½ by 2¼ inches.

Fiske & Company furnished their "Tapestry" brick for the Masonic Temple, Brooklyn, illustrated in this issue.

The new plant of the Bradford Pressed Brick Company, at Bradford, Pa., William Hanley, proprietor, was formally opened on June 25th. Representatives of the company's selling agencies in the larger cities of the country were in attendance, and in addition others who are prominently identified with the burnt-clay industries of the country. A banquet was tendered the visitors on the evening of June 25th, at which the leading merchants, bankers, and professional men of Bradford were in attendance. The whole country about Bradford is noted for its superior clays and shales, and the new plant will be devoted exclusively to the making, by the stiff mud process, of "Bradford Reds," a brick which is well-known throughout the building fraternity of the entire country.



Architectural terra cotta, made by Northwestern Terra Cotta Company. Robert C. Berlin, Architect.

DETAIL BY LEON STERN, ARCHITECT.
Brick Terra Cotta & Tile Co., Makers.

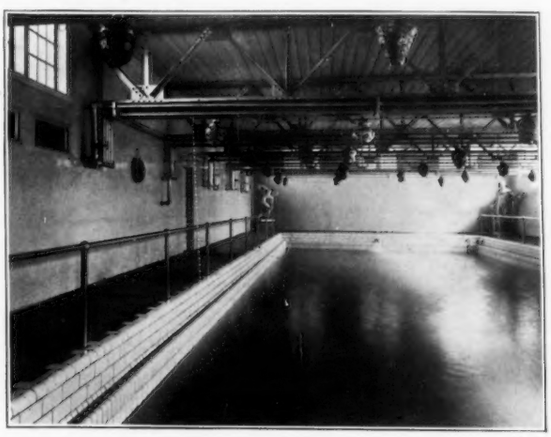
The Columbus Brick & Terra Cotta Company, of Columbus, Ohio, has issued a new catalogue in which is illustrated, by drawings, their full line of special-shape bricks, and also an interesting series of buildings by prominent architects which have been built of their product. An especially interesting feature of this work is the presentation of drawings which give by number the different shape bricks which are needed for the different ornamental courses. Accompanying the catalogue there is a price list of all the ornamental brick made by the company.

The Atlantic Terra Cotta Company furnished the architectural terra cotta for three of the buildings illustrated in this issue, viz: the Masonic Temple, Brooklyn, Lord & Hewlett and Pell & Corbett, associated, architects; Masonic Temple, Washington, D. C., Wood, Donn & Deming, architects, and the Irem Temple, Wilkes Barre, Pa., Olds & Puckey, architects.

The Masonic Temple, Brooklyn, is one of the most notable examples of glazed terra cotta in colors so far undertaken. As it is the latest example of polychrome terra cotta or architectural faience (the two terms being synonymous) so also may it be said to express the best in the art.

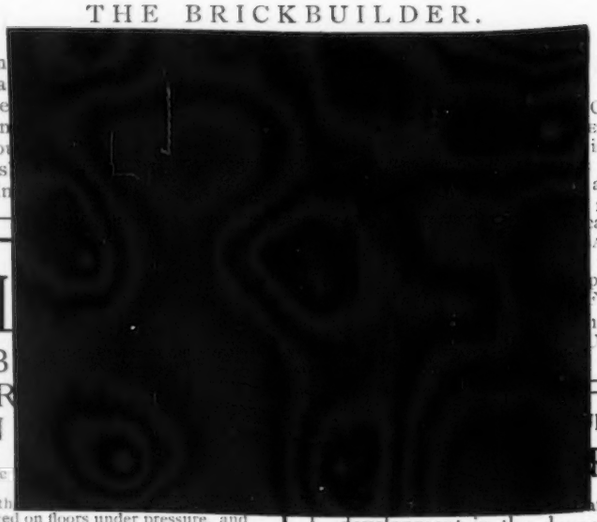
The predominant color is cream white and the material is made with a special vellum finish. The decorative treatment in colors is in yellow, green, sienna, and blue, and the selection of these colors was conceived in excellent taste and has been carried out skilfully Four or five colors were, in many instances, used on one piece. The manufacture of so large a quantity of colored glazed work was a task of no small magnitude and importance and it was absolutely necessary that a work so costly as this should not be delayed and that the elaborate color scheme should not only be produced successfully, but at the first burning, and this was done.

DETAIL BY SCHWARTZ & GROGS, ARCHITECTS.
New Jersey Terra Cotta Company, Makers.



SWIMMING POOL, WORCESTER ACADEMY, WORCESTER, MASS.
Showing life rail and gutter built of patented enameled brick, made by American Enameled Brick & Tile Co.

The Irem Temple, the en
cotta, is of Moorish design a
of the possibilities of archite
employed are white, golden
blue being used as a backgro
The Masonic Temple, Was
design and is done in grey li



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COMPETITION FOR A BRICK HOUSE.

COST NOT TO EXCEED $10,000.

FIRST PRIZE, $500. SECOND PRIZE, $250. THIRD PRIZE, $150. FOURTH PRIZE, $100. MENTIONS.

PROGRAM.

The problem is a house with walls built of brick. Porches, verandas, or piazzas may be in part or wholly of brick or wood.

The cost of the house (exclusive of the land) including heating—equipment complete; plumbing—including all fixtures; gas piping and electric wiring—with fixtures, is not to exceed $10,000.

Designs which in the opinion of the jury call for a house which would cost more than the amount named to execute will not be considered.

The plan should provide accommodations for a family of five—three adults and two children—and at least one servant. There are no restrictions as to size, shape, or style of house—except the cost—nor the size, shape, or location of lot.

The particular object of this Competition is to obtain designs for a BRICK HOUSE of moderate cost. It is especially desired that the treatment of the exterior shall show the possibilities in obtaining charming but restrained effects by the use of bond and jointing and pattern. The BRICK HOUSE is rich in precedent, and the material, whether considered from the esthetic or the practical standpoint, meets in the fullest measure the demands put upon it. To summarize: —the Competition calls for A CHARMING BRICK HOUSE OF MODERATE COST.

CONSTRUCTION.

The methods usually employed in the construction of brick walls may be followed, except that the walls are to be wholly of brick and of sufficient thickness to safely carry the load. The program does not call for a fireproof house, although that form of construction is not objected to. The choice of brick is left to the designer.

DRAWINGS REQUIRED.

On one sheet a pen and ink perspective, without wash or color, drawn at a scale of four feet to the inch. Also plans of first and second floors at a scale of eight feet to the inch. In connection with the plan of the first floor show as much of the arrangement of the lot in the immediate vicinity of the house as space will permit.

On another sheet, at the top, the front elevation drawn at a scale of eight feet to the inch,—and below the elevation, a sufficient number of details to properly show the brickwork and the special features of the design,—drawn at half inch scale in black ink without wash or color. Sections shown are to be cross-hatched in such manner as to clearly indicate the material, and floor plans are to be blocked in solid.

The size of each sheet is to be exactly 24 inches by 18 inches. Strong border lines are to be drawn on both sheets one inch from edges, giving a space inside the border lines 22 inches by 16 inches. The sheets are not to be mounted.

Each set of drawings is to be signed by a *nom de plume* or device, and accompanying same is to be a sealed envelope with the *nom de plume* on the exterior and containing the true name and address of the contestant.

The drawings are to be delivered flat, or rolled (packaged so as to prevent creasing or crushing), at the office of THE BRICKBUILDER, 85 Water Street, Boston, Mass., on or before Sept. 15, 1909.

Drawings submitted in this Competition are at owner's risk from time they are sent until returned, although reasonable care will be exercised in their handling and keeping.

The designs will be judged by three or five well-known members of the architectural profession.

In making the award the jury will take into account the fitness of the design in an artistic sense to the material employed: the adaptability of the design as shown by details to the practical constructive requirements, and the excellence of the plan.

Drawings which do not meet the requirements of the program will not be considered.

The prize drawings are to become the property of THE BRICKBUILDER, and the right is reserved to publish or exhibit any or all of the others. The full name and address of the architect will be given in connection with each design published. Those who wish their drawings returned, except the prize drawings, may have them by enclosing in the sealed envelopes containing their names ten cents in stamps.

For the design placed first there will be given a prize of $500.
For the design placed second a prize of $250.
For the design placed third a prize of $150.
For the design placed fourth a prize of $100.

This Competition is open to everyone. The prize and mention drawings will be published in THE BRICKBUILDER.